Repair Manual

Golf Variant 2007 ➤
Golf Variant 2010 ➤
Jetta 2005 ➤

Heating, Ventilation and Air Conditioning

Edition 05.2017

List of Workshop Manual Repair Groups

Repair Group

80 - Heating, Ventilation

87 - Air Conditioning

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

Contents

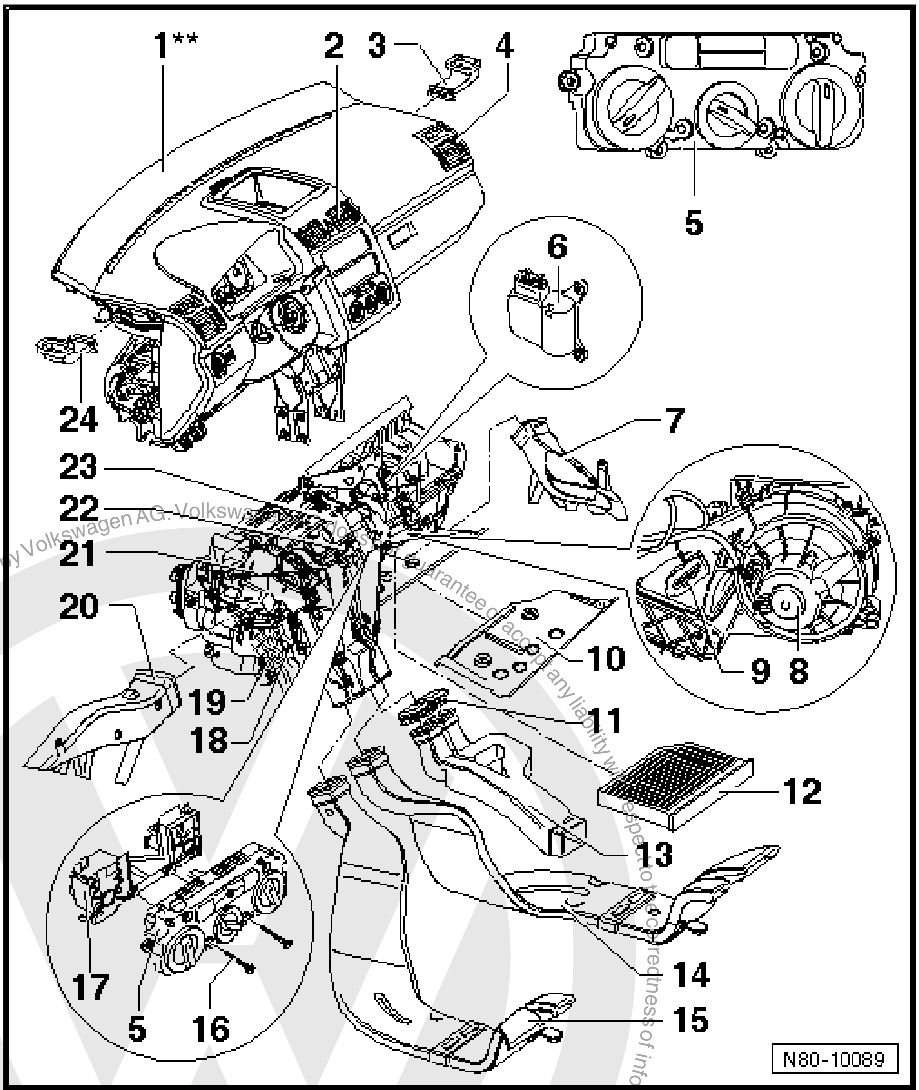
80 – Heating, Ventilation

1 Heating, Servicing

(Edition 05.2017)

1.1 Passenger Compartment Heating

Disconnect the battery before removing any components marked with **. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery .



1 - Instrument Panel **

2 - Center Vent

- ❑ Vent, removing. Refer to ⇒ “1.5.1 Center Vents, Removing and Installing, Golf Wagon from MY 2007 and Jetta from MY 2005”, page 6 .

3 - Right Side Vent

4 - Right Vent

- ❑ Vent, removing. Refer to ⇒ “1.5.3 Right or Left Vent, Removing and Installing”, page 7 .

5 - Heating and Ventilation Controls

- ❑ With Fresh Air/Recirculation Door Switch - E159-
- ❑ Also with Immediate Heating Button - E537- in vehicles with auxiliary heater
- ❑ Removing the controls. Refer to ⇒ “1.6 Heating and Ventilation Controls, Removing and Installing”, page 9 .

6 - Fresh/Recirculated Air Door Motor - V154-

- ❑ Removing. Refer to ⇒ “1.10 Fresh/Recirculated Air Door Motor V154 , Removing and Installing”, page 13 .

7 - Right Footwell Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.5 Right Footwell Vent, Removing and Installing”, page 8 .

8 - Fresh Air Blower - V2-

- ❑ Removing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

9 - Fresh Air Blower Series Resistor with Fuse - N24-

- ❑ Removing and installing. Refer to ⇒ “1.3 Fresh Air Blower Series Resistor with Fuse N24 , Removing and Installing”, page 5 .

10 - Heater Partition

- ❑ Removing. Refer to ⇒ Fig. ““Removing the Heater Partition”“ , page 4 .

11 - Closure Caps

- ❑ Only in vehicles without the air guide to the vent installed in the rear center console

12 - Dust and Pollen Filter

- ❑ With activated charcoal filter
- ❑ Removing and installing. Refer to ⇒ “1.4 Dust and Pollen Filter, Removing and Installing”, page 5 .

13 - Connection

- ❑ For center console air guide
- ❑ To remove, the center console must be removed. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console

14 - Right Footwell Rear Channel

- ❑ Removing and installing. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

15 - Left Footwell Rear Channel

- ❑ Removing and installing. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

16 - Screw

- ❑ Varying lengths
- ❑ Quantity: 8

17 - Adapter for Controls

- ❑ Removing and installing. Refer to ⇒ “1.9 Temperature Control Door Release Cable, Removing and Installing”, page 12 .

18 - Auxiliary Heater Heating Element - Z35-

Vehicles from 1K-7M 119 726

- ❑ With Auxiliary Air Heater Control Module - J604-
- ❑ Checking using Vehicle Diagnostic Tester under Heating, Ventilation and Air Conditioning; OBD-Capable Systems; Auxiliary Heater; Electrical Components.
- ❑ Removing and installing. Refer to ⇒ “1.12 Auxiliary Heater Heating Element Z35 , Removing and Installing, Vehicles through 1K-7M 119 726”, page 17 .

Vehicles from 1K-7M 119 726

- ❑ A 3-stage Auxiliary Heater Heating Element - Z35- is installed here. It is controlled by each motor control module via relays.
- ❑ Only installed on vehicles with a diesel engine without an auxiliary heater
- ❑ Removing and installing. Refer to ⇒ “1.13 Auxiliary Heater Heating Element Z35 , Checking, Removing and Installing, Vehicles from 1K-7M 119 727”, page 18 .

19 - Heater Core

- ❑ After replacing the heater core, replace all the coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Coolant System/Coolant .
- ❑ Removing and installing. Refer to ⇒ “1.11 Heater Core, Removing and Installing”, page 14 .

20 - Left Footwell Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

21 - Temperature Control Door Release Cable

- ❑ Removing and installing. Refer to ⇒ “1.9 Temperature Control Door Release Cable, Removing and Installing”, page 12 .

22 - Flexible Shaft

- ❑ Removing and installing. Refer to ⇒ “1.8 Flexible Air Distribution Shaft”, page 11 .

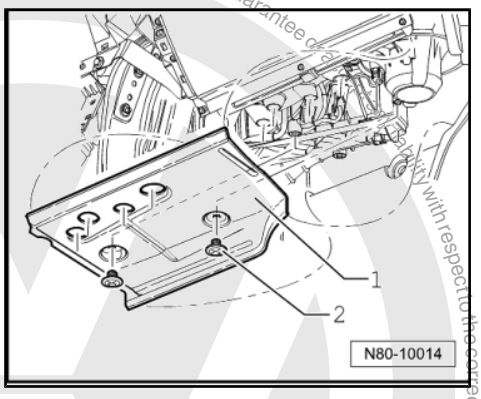
23 - Heater

- ❑ Removing and installing. Refer to ⇒ “1.16 Heater, Removing and Installing”, page 21 .
- ❑ Disassembling and assembling. Refer to ⇒ “2 Heater, Disassembling and Assembling”, page 25 .

24 - Left Side Vent

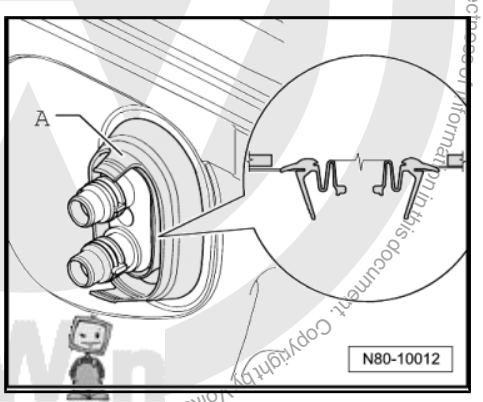
Removing the Heater Partition

– Remove the plastic screws -2- and the partition -1-.



Installation Position of Seal for Heater and Engine Compartment

– Insert the seal between the heater and the engine compartment -A- into the plenum chamber bulkhead first. Install the heater core.



Note

The installation position must be observed to prevent water from entering the vehicle interior.

1.2 Fresh Air Blower - V2- , Removing

The Fresh Air Blower - V2- is accessible from the front passenger side footwell.

– Remove the partition from the heater. Refer to ⇒ Fig. ""Removing the Heater Partition"" , page 4 .

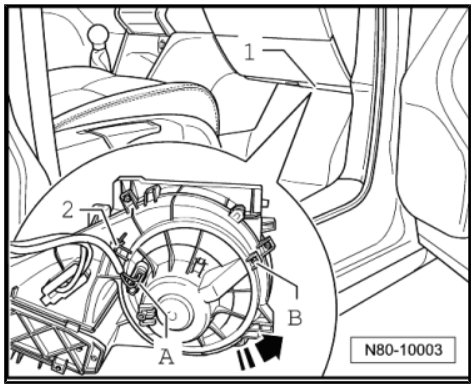
If Necessary:

– Remove the right footwell vent. Refer to ⇒ "1.5.5 Right Footwell Vent, Removing and Installing", page 8 .

– Remove the connector -A- on the Fresh Air Blower - V2- .

– Remove the bolt -B- for Fresh Air Blower - V2- (1 Nm).

– Release the locking mechanism -2- and turn the Fresh Air Blower - V2- in the direction of the -arrow- and remove it



1.3 Fresh Air Blower Series Resistor with Fuse - N24- , Removing and Installing

Removing

WARNING

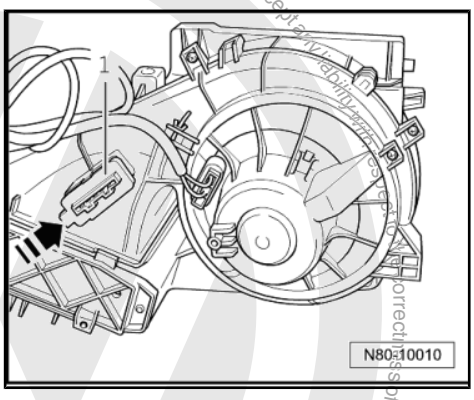
There is a danger of burns.

The Fresh Air Blower Series Resistor With Fuse - N24- may be hot.

Let the Fresh Air Blower Series Resistor With Fuse - N24- cool before removing it.

Perform following work first:

- Remove the partition from the heater. Refer to ⇒ Fig. ""Removing the Heater Partition"" , page 4 .
- Disconnect the connector -1- from the Fresh Air Blower Series Resistor With Fuse - N24- .
- Push the retainer in the direction of -arrow- and remove the Fresh Air Blower Series Resistor with Fuse - N24- from the heater.



Installing

Install in reverse order of removal.

1.4 Dust and Pollen Filter, Removing and Installing

Removing

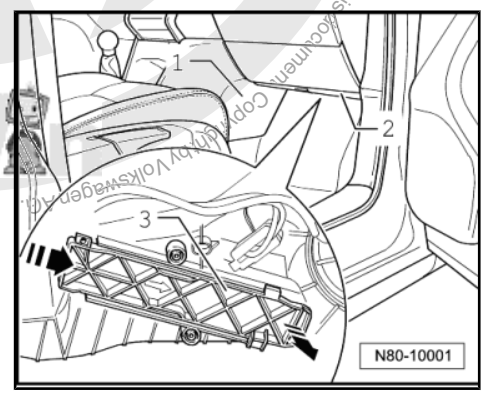
- Remove the footwell trim -1- from the front passenger.

Depending on the Vehicle Equipment

- Remove the partition -2- from the heater. Refer to ⇒ Fig. ""Removing the Heater Partition"" , page 4 .

All Vehicles

- Release cover -3- in the direction of -arrow-.
- Remove dust and pollen filter downward out of heater.

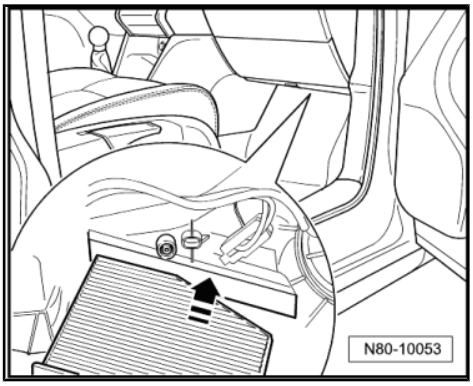


Installing

Install in reverse order of removal.

Note

Note installation position of dust and pollen filter.



1.5 Vents, Removing

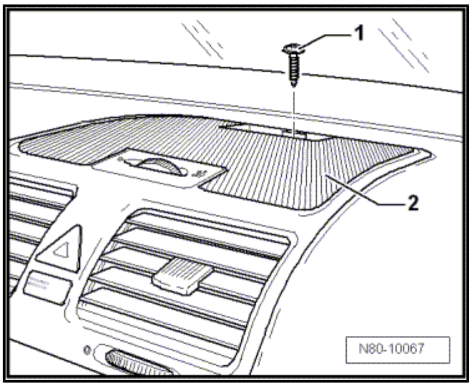
1.5.1 Center Vents, Removing and Installing, Golf Wagon from MY 2007 and Jetta from MY 2005

Removing

– If the vehicle has Climatronic, remove the photosensor. Refer to ⇒ “4.17 Sunlight Photo Sensor G107 or Sunlight Photo Sensor 2 G134 , Removing”, page 72 .

– Remove the screw -1-.

– Remove the cover -2- (Only on vehicles with Climatronic).



Note

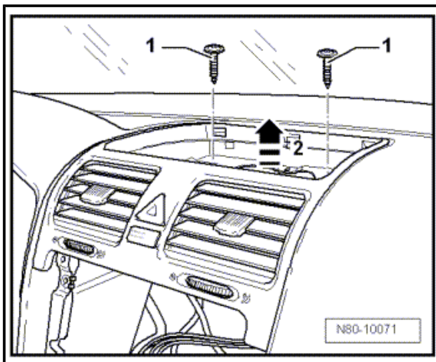
In vehicles without Climatronic, bolts are under a liner mat.

– Remove the screws -1-.

– Remove storage compartment from instrument panel.

– Remove the center vent -2- upward in the direction of -arrow-.

– Disconnect the connectors from the center vents.



Installing

Install in reverse order of removal.

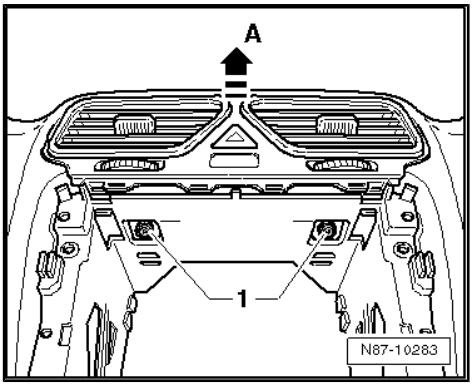
1.5.2 Center Vents, Removing and Installing, Golf Wagon from MY 2010

– Remove the radio. Refer to ⇒ Communication; Rep. Gr. 91 ; Radio .

– Remove the screws -1-.

– Disconnect the connectors on the center vents.

– Remove center vents from instrument panel in the direction of -arrow A-.



1.5.3 Right or Left Vent, Removing and Installing

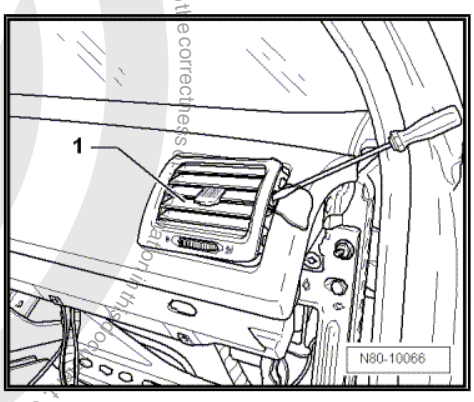
Note

- *Removing the vents is identical on both sides, only the sides are reversed.*
- *To prevent damage to instrument panel, use a pad when prying out.*

Removing

– Pry out the vent -1- using an appropriate tool.

– Disconnect the connector from the vent.



Installing

Install in reverse order of removal.

1.5.4 Right and Left Footwell Rear Channel, Removing and Installing

Note

Removal of rear channels on both sides is identical, only the sides are reversed.

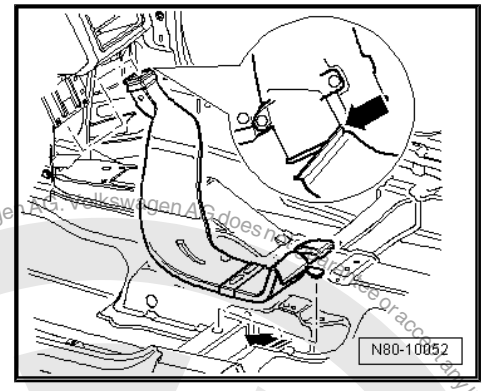
Removing

– Remove the front passenger or driver seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Front Seats .

– Remove the center console. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console .

– Lift the carpet, unclip the rear channel from the underbody and remove it from the heater.

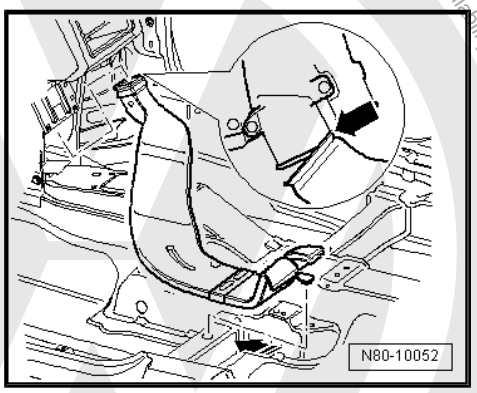
Installing



Note

When installing the rear channel, ensure the rear channel is first slid onto the heater -arrow- and then clipped in to the underbody.

Install in reverse order of removal.



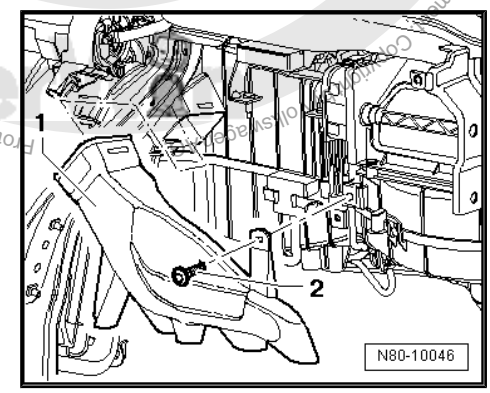
1.5.5 Right Footwell Vent, Removing and Installing

Removing

– Remove the glove compartment. Refer to ⇒ Rep. Gr. 68 .
– Remove the bolt -2- and the right footwell vent -1-.

Installing

Install in reverse order of removal.



Note

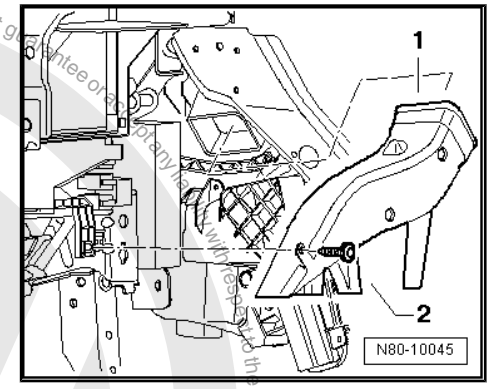
If the vehicle has glove compartment cooling, check that the coolant hose is seated correctly.

1.5.6 Left Footwell Vent, Removing and Installing

Removing

– Remove the driver side storage compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .

– Remove the screw -2- and the left footwell vent -1-.



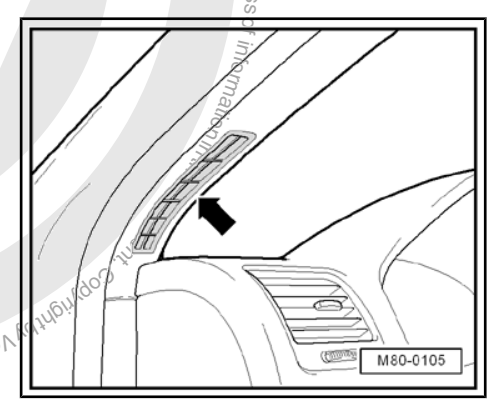
Installing

Install in reverse order of removal.

1.5.7 Side Window Vents, Removing and Installing

The side vents -arrow- are located in the A-pillar trim panel.

– Remove the left or right A-pillar trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels .



1.6 Heating and Ventilation Controls, Removing and Installing

Connectors for Heating and Ventilation Controls. Refer to ⇒ “1.7 Connectors for Heating and Ventilation Controls”, page 10 .

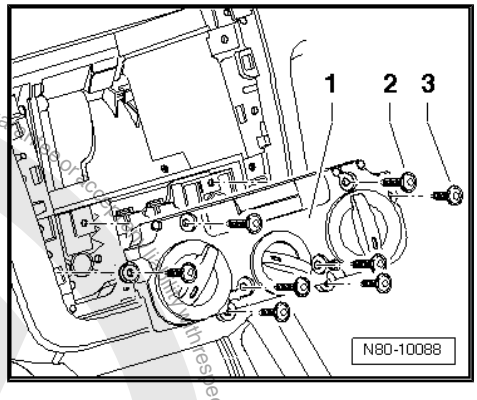
Removing

Note

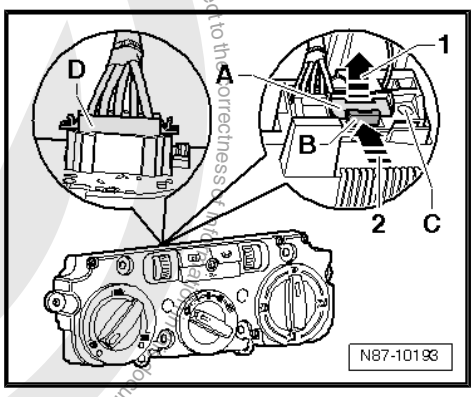
- *The controls consist of two separable housings. Before removing controls, bring the knobs into the following position:*
- *Heater control to “cold”*
- *Blower to “0”*
- *Air flow direction to “footwell”*

– Remove the radio. Refer to ⇒ Communication; Rep. Gr. 91 ; Radio .

– If the vehicle does not have radio, remove the trim from the center of the instrument panel Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .



– Remove the bolts -2- (4.2 x 45) and -3- (4.2 x 16) and the controls -1- from the center console.
– Release the connector lock -A- by pulling it in the direction of -arrow 1-.
– Press the connector lock -B- toward the connector in the direction of -arrow 2- and remove the connector -C-.
– Loosen the connector lock -D- and remove the connector -D-.



Note

The version with the manual climate control system is shown in the illustration. Procedure to release the connectors is the same.

Installing

Install in reverse order of removal. Be sure install the control knobs in the same position they were in when they were removed.

Sedan from MY 2011

To set basic settings on the Climatic control module after replacement follow these steps

– Set the blower on position 1 or 2
– Start the engine
– Press and hold the defrost and A/C buttons at the same time
– Hold the buttons for 5-7 seconds until the defrost, A/C, and recirculation buttons are illuminated
– Restart the vehicle and recheck all functions before returning the vehicle to the customer.

1.7 Connectors for Heating and Ventilation Controls

⇒ "1.7.1 Multi-Pin Connectors on Rear of Heating and Ventilation Controls, Pin Assignment ", page 10

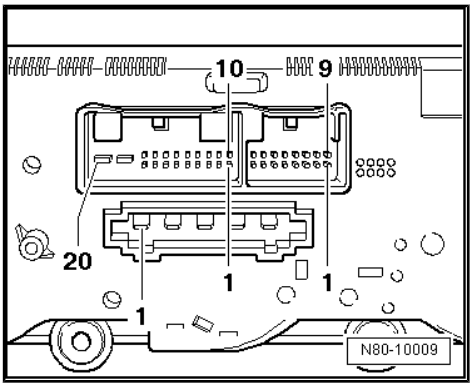
1.7.1 Multi-Pin Connectors on Rear of Heating and Ventilation Controls, Pin Assignment

Special tools and workshop equipment required

♦ Connector Test Set - VAG1594/D-

16-Pin Connector Is Not Assigned.

5-Pin Harness Connector, in Wiring Diagram T5



1 - 3. Blower Speed

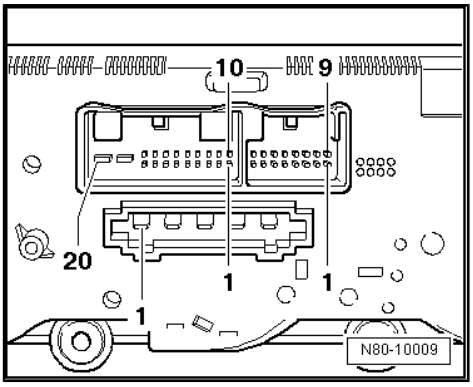
2 - 2. Blower Speed

3 - 1. Blower Speed

4 - 4. Blower Speed

5 - Terminal X

20-Pin Harness Connector, in Wiring Diagram T20c



3 - Fresh/Recirculated Air Door Motor - V154-

6 - Fresh/Recirculated Air Door Motor - V154-

7 - Auxiliary Air Heater Control Module - J604-

8 - Rear Window

11 - Heated Driver Seat Control Module - J131-

15 - Heated Front Passenger Seat Control Module - J132-

16 - Seat Heating Terminal 75 (optional)

18 - Terminal 30

19 - Terminal 15

20 - Terminal 31

1.8 Flexible Air Distribution Shaft

⇒ "1.8.1 Flexible Air Distribution Shaft, Removing and Installing", page 11

⇒ "1.8.2 Checking", page 12

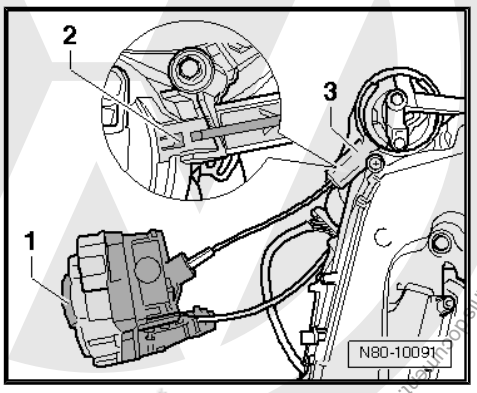
1.8.1 Flexible Air Distribution Shaft, Removing and Installing

Removing

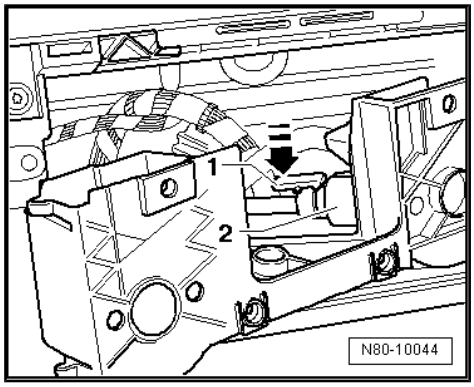
– Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .

– Move the flexible shaft into the following position:

– Turn the air distribution control -1- until the locking mechanism on the shaft -2- is visible in the gear mechanism -3-.



– Remove the heating and ventilation controls. Refer to ⇒ “1.6 Heating and Ventilation Controls, Removing and Installing”, page 9 .
– Reach into the center console and push the tab -1- in the direction of -arrow- to release it.
– Pull flexible shaft out of the adapter -2-.



Note

When installing the flexible shaft the adapter and knobs on the heating and ventilation controls must have a specific position to each other. Otherwise they will malfunction. Refer to ⇒ “1.8.2 Checking”, page 12 .

1.8.2 Checking

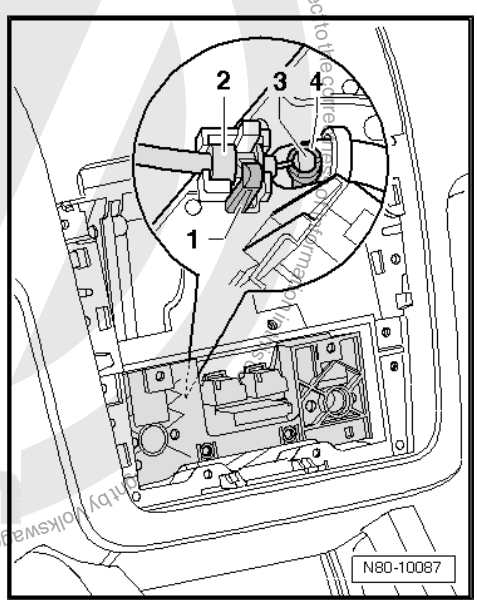
Flexible shaft for adjusting unit of air distribution doors:

– Let fresh air blower run on highest speed. If air flows out of defroster vents in the “Defrost” position and no air flows out of footwell vents, installation of flexible shaft is correct. If this is not the case, remove the flexible shaft from the adapter. Place the heating and ventilation controls onto the adapter and turn the air distribution control $^{1}/_{2}$ rotation (180°). Then reconnect the flexible shaft. Repeat the test.

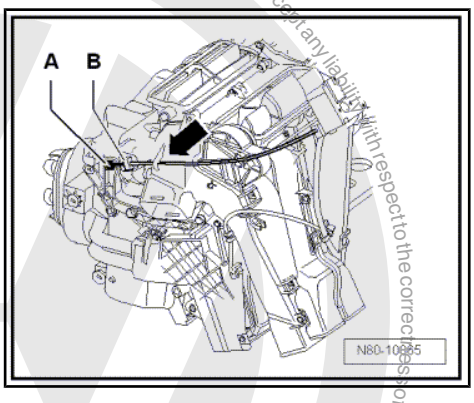
1.9 Temperature Control Door Release Cable, Removing and Installing

Removing

– Remove the heating and ventilation controls. Refer to ⇒ “1.6 Heating and Ventilation Controls, Removing and Installing”, page 9 .
– Reach in the center console and loosen the retainer -1- on the release cable sleeve -2-. Remove the release cable sleeve from the mount.
– Loosen the ball on the cable -3- from the lever.
– Remove the driver side footwell trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Vehicle Interior Trim Panels .

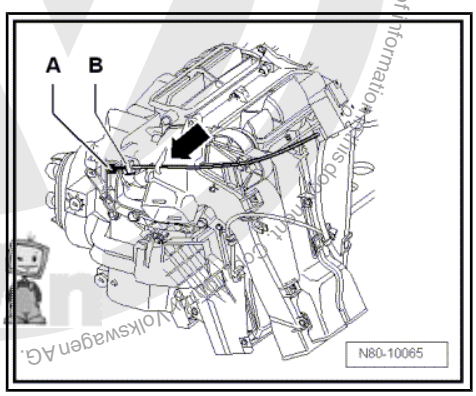


– Unclip the release cable at the temperature control door adjuster -A- and unclip the heater -B-.



Installing

Install in reverse order of removal. When doing this, make sure that release cable lies under the hook -arrow-.



– Check if the temperature control can be moved easily from “cold” to “warm”.

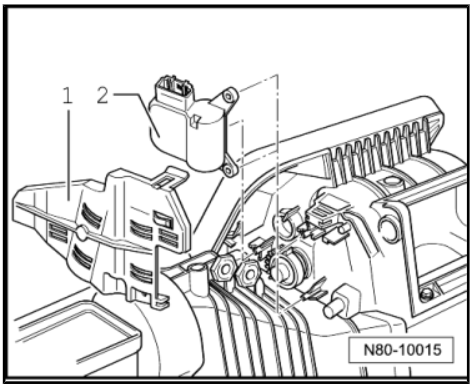
1.10 Fresh/Recirculated Air Door Motor - V154- , Removing and Installing

Removing

Note

The position of the air recirculation door must not be changed.

– Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .
– Remove the cover -1-.
– Disconnect the connector from the Fresh/Recirculated Air Door Motor - V154- -2-.
– Remove the Fresh/Recirculated Air Door Motor - V154- -2- for the mount.



Installing

Install in reverse order of removal.

Note

After installing the Fresh/Recirculated Air Door Motor - V154- , the function of the recirculating air door must be checked.

– Checking. Refer to Vehicle Diagnostic Tester
– Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

1.11 Heater Core, Removing and Installing

Removal

Special tools and workshop equipment required

- Shop Crane - Drip Tray - VAS6208-
- Hose Clamps - Up To 40 mm - 3093-
- Compressed air gun, commercially available

– Remove the bulkhead in the plenum chamber. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Plenum Chamber Cover .

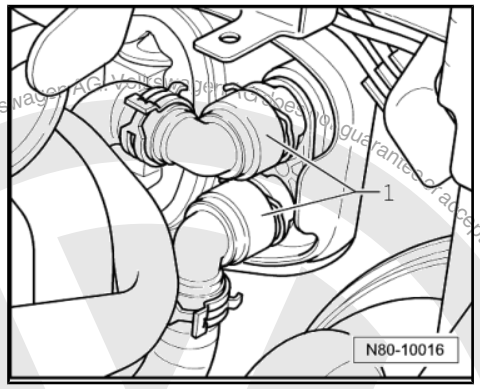
– Place the -VAS6208- under the engine.

WARNING

The coolant system is under pressure when the engine is warm!

There is a risk of scalding from hot steam and coolant.

To reduce the pressure, cover the coolant reservoir cap with cloth and then open it carefully.

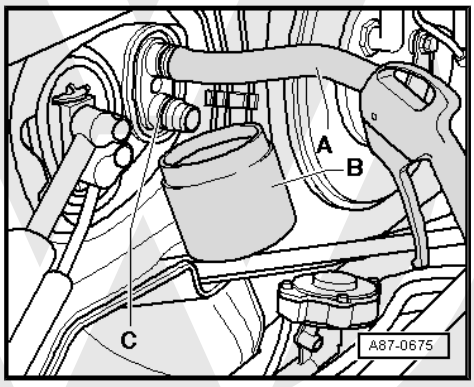


– Clamp the coolant hoses -1- using the -3093- and disconnect the coolant hoses from the heater core.

– Connect a section of the hose -A- to the upper connection on the heater core.

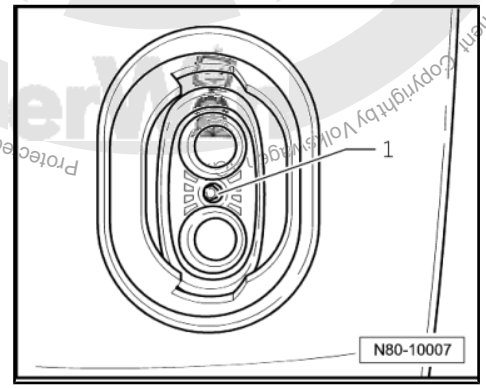
– Hold a container -B- under the lower connection -C-.

– Using a compressed air gun, carefully blow out any coolant still inside the heater core into the container -B-.



– If applicable, remove the knee airbag and knee airbag bracket. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Removal and Installation .

– Remove the bolt (6 mm inner hex) -1- from the connection flange between the heater core connections.



Note

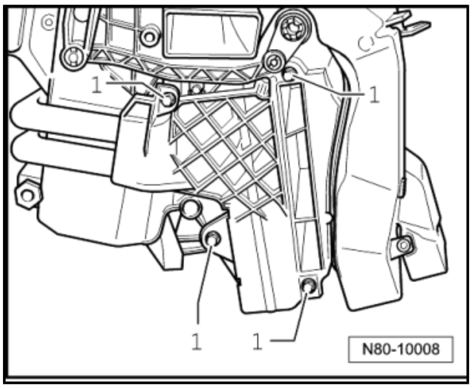
This allows the coolant pipes to move for removing the heater core.

– Remove the driver side footwell trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Vehicle Interior Trim Panels .

– Remove the left footwell vent. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

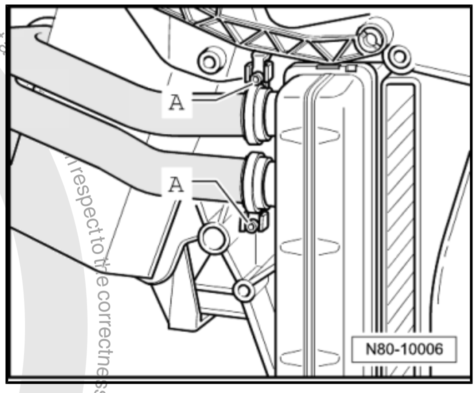
– Remove the bolts -1- and remove the heater core trim panel.

– Cover the carpet in the area under the heater core with waterproof foil and water absorbing paper.



– Open the hose clamps -A- and remove the coolant pipes from the heater core.

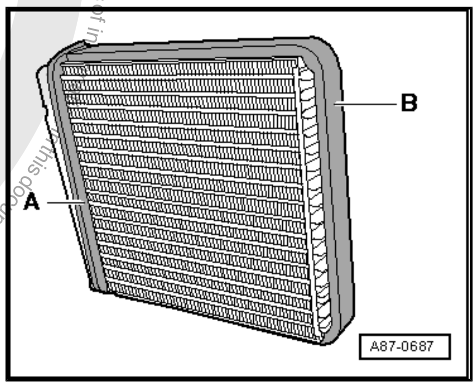
– Remove the heater core from the heater.



Installing

Install in reverse order of removal. Note the following:

– Check the seals -A and B- on the heater core for damage and only install a heater core with undamaged seals.



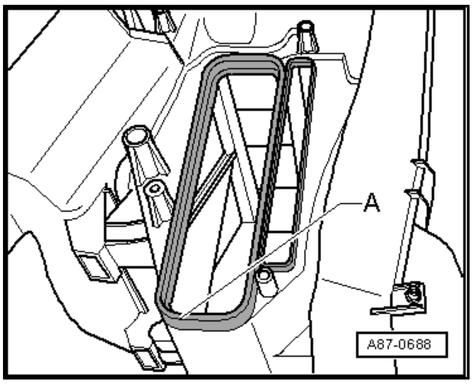
Note

- *An incorrectly glued seal can roll up into heater when sliding in the heater core.*
- *Cold air may flow past heater core if seal is damaged or not properly fitted.*

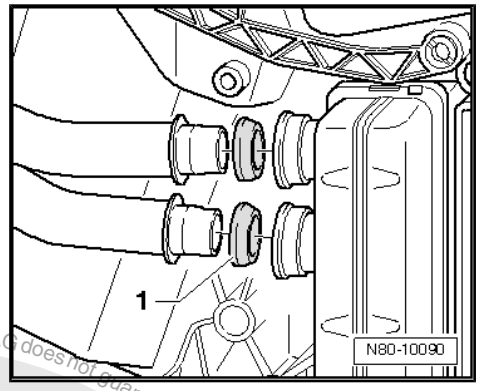
– Check the heater (while the heater core is removed) through the shaft -A- for the heater core, for debris.

– Remove any dirt or coolant which has leaked out of the heater (for example, after removing a leaking heater core).

– Install the heater core into the heater.



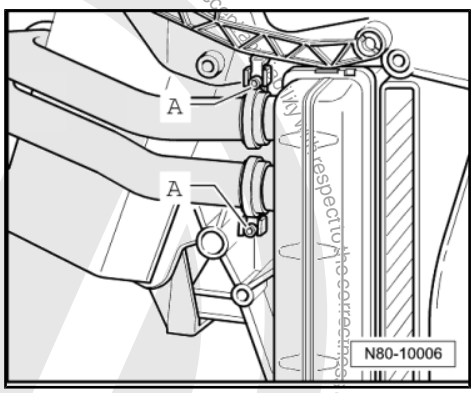
– Coat sealing rings -1- with coolant before installing.
– Install the seals -1- into the connection on the heater core.



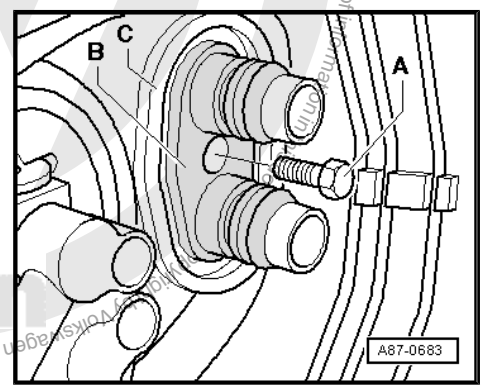
Note

- *Ensure sealing rings are installed on the proper side, as shown in the illustration.*
- *If hose clamps are deformed, replace them.*

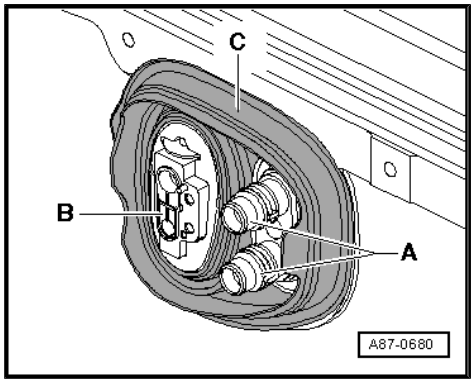
– Attach the coolant pipes to the heater core.
– Hose clamps -A- must be able to be twisted slightly when installing onto the coolant pipes.
– Hose clamps -A- must be installed as illustrated.
– Tighten the hose clamps -A- to 2.0 Nm.
– Check the clamps -A- for proper seating after tightening the screws. They must completely enclose the flange on the heater core and coolant pipe and must not come in contact with other components.



– Thread the bolt -A- into the connection flange -B- and while doing this make sure the bolt is actually threaded into the mounting point intended for it.



– Make sure the grommet -C- is seated correctly inside the bulkhead.
– Seal flange for coolant pipes to heater core -A- and for expansion valve (to evaporator, only in vehicles with A/C system) -B- at the grommet pass-through -C- with silicon adhesive if necessary (to prevent water from penetrating).



Note

- *Always replace the seals.*
- *If hose clamps are deformed, replace them.*
- *After replacing heater core, inspect and add coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Coolant System/Coolant .*
- *Check the coolant circuit for leaks. Pay special attention to the connection between the coolant pipes and the heater core.*

1.12 Auxiliary Heater Heating Element - Z35- , Removing and Installing, Vehicles through 1K-7M 119 726

Removing

Note

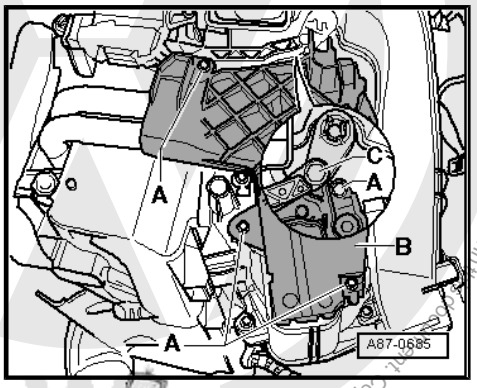
Only installed on vehicles with a diesel engine without an auxiliary radiator.

– Remove the driver side footwell trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels .

– Remove the left footwell vent. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

Note

If the temperature door lever -C- is at a position that hinders access to the upper screw -A-. Change the position of the temperature door using the heating and ventilation controls; on vehicles with Climatronic (for example “Hi” setting).

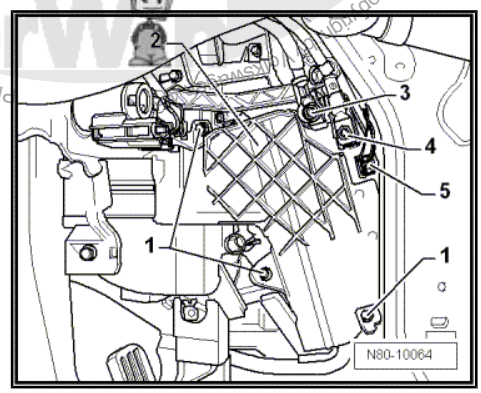


– Remove the screws -1- from the cover -2-.

Caution

Danger of electrical short circuit.

Disconnect the battery before performing any work.



– Remove the nuts for the power supply -3- and the ground connection -4- (6 ± 1 Nm).

– Disconnect the connectors -5- from the Auxiliary Heater Heating Element - Z35- .

WARNING

There is a danger of burns.

The Auxiliary Heater Heating Element - Z35- may be hot.

Allow the Auxiliary Heater Heating Element - Z35- to cool before removing it.

– Remove the Auxiliary Heater Heating Element - Z35- from the heater.

Installing

Install in reverse order of removal.

1.13 Auxiliary Heater Heating Element - Z35- , Checking, Removing and Installing, Vehicles from 1K-7M 119 727

1.13.1 Auxiliary Heater Heating Element - Z35- with Peripheral Components, Checking

The Auxiliary Heater Heating Element - Z35- with peripheral components (load signal for generator terminal DF, Low Heat Output Relay - J359- , High Heat Output Relay - J360- , Intake Manifold Temperature Sensor - G72- , Engine Coolant Temperature Sensor - G62-) can be checked using engine control module OBD.

1.13.2 Auxiliary Heater Heating Element - Z35- , Checking

Special tools and workshop equipment required

- Vehicle Diagnostic Tester with Vehicle Diagnosis System - Trigger Clamp - 100A - VAS5051B/7-

1.13.3 Test Conditions

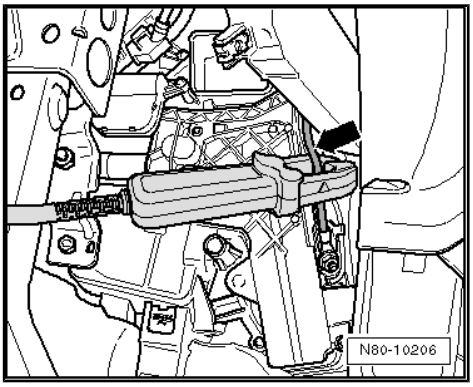
- The intake temperature is below 19 °C (66.2 °F).
- The coolant temperature is below 80 °C (176 °F).
- The passenger compartment temperature is approximately 20 °C (68 °F).
- Battery voltage is greater than 11 V
- Generator load is not greater than 50% (terminal DF)
- Engine speed higher than 450 RPM
- Turn the interior temperature control to maximum heating.

1.13.4 Test Sequence

– Remove the left footwell vent. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

– Remove the left footwell center console trim panel.

– Measure the current draw at the ground cable -arrow- using the Vehicle Diagnostic Tester and the Test Instrument Set - Current Clamp - 100A - VAS6356/4A- .



Low heat output ≈ 30 amp

Medium heat output ≈ 60 amp

High heat output ≈ 80 amp

1.13.5 Removing and Installing

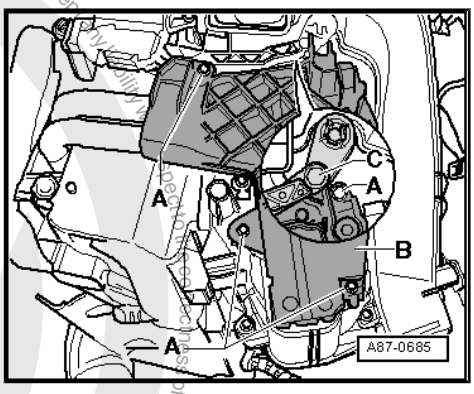
Removing

– Remove the driver side footwell trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels .

– Remove the left footwell vent. Refer to ⇒ "1.5.6 Left Footwell Vent, Removing and Installing", page 8 .

Note

If the temperature door lever -C- is at a position that hinders access to the upper screw -A-. Change the position of the temperature door using the heating and ventilation controls; on vehicles with Climatronic (for example "Hi" setting).



– Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery .

– Remove the bolts -A- from the cover -B-.

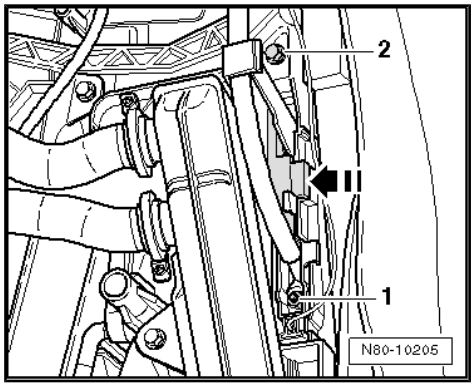
Caution

Danger of electrical short circuit.

Disconnect the battery before performing any work.

– Remove the nut -1- 9 ±1 Nm.

– Loosen the retainer on the connector strip in the direction of -arrow-.



WARNING

There is a danger of burns.

The Auxiliary Heater Heating Element - Z35- may be hot.

Allow the Auxiliary Heater Heating Element - Z35- to cool before removing it.

– Remove the bolt -2- 1.4 Nm and pull the Auxiliary Heater Heating Element - Z35- out of the blower case.

Installing

Note

Make sure the ground cable is positioned correctly.

Install in reverse order of removal.

1.14 Ventilation, Checking

⇒ "1.14.1 Checking", page 20

1.14.1 Checking

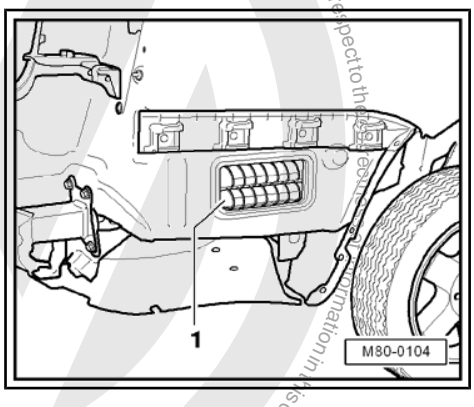
Note

- *The stale air escapes through the vent openings in the luggage compartment trim panels.*
- *The ventilation openings must not be covered in order for the ventilation to function properly.*
- *The ventilation frames are located in the rear side panels, behind the bumper.*

– Remove the rear bumper. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Rear Bumper Cover.

– The sealing lips -1- in the ventilation frame on both sides of vehicle must be free to move and close automatically.

– Observe the installation position.

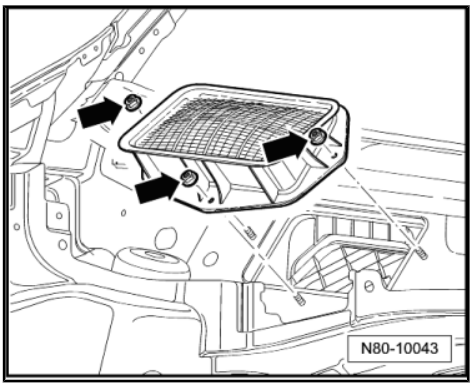


1.15 Air Grille, Removing and Installing

Removing

– Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Plenum Chamber Cover .

– Remove the nuts -arrows- and the air grille.



Installing

Install in reverse order of removal.

Note

The seal must fit correctly in the air grille.

1.16 Heater, Removing and Installing

⇒ “1.16.1 Heater Removing and Installing”, page 21

1.16.1 Heater Removing and Installing

Special tools and workshop equipment required

- Shop Crane - Drip Tray - VAS6208-
- Hose Clamps - Up To 40mm - 3093-
- Compressed air gun, commercially available

Note

To improve accessibility, additional components, for example, the engine cover, must be removed (depending on engine version). Refer to ⇒ Maintenance ; Booklet 20.1 ; Upper Engine Cover, Removing and Installing .

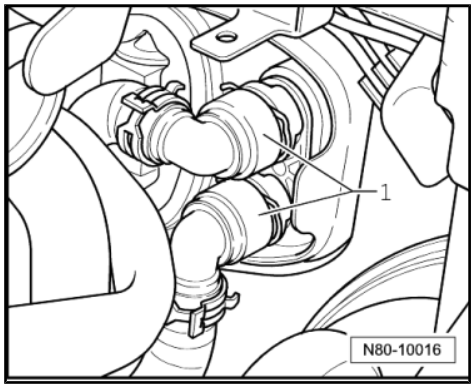
– Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .

– Remove the bulkhead in the plenum chamber. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Plenum Chamber Cover .

– Remove the rear channels from the right and left footwells. Refer to
⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

– Place the -VAS6208- under the engine.

– Mark the coolant hoses -1-.



WARNING

The coolant system is under pressure when the engine is warm!

There is a risk of scalding from hot steam and coolant.

To reduce the pressure, cover the coolant reservoir cap with cloth and then open it carefully.

– Clamp the coolant hoses -1- using the -3093- and disconnect the coolant hoses from the heater core.

– Using a compressed air gun, carefully blow residual coolant out of heater core at heater core connection.

– Cover the carpet inside the passenger compartment with waterproof foil and water absorbing paper.

Note

When removing, record the bolt lengths and allocation for the reinstallation.

1 - Bolt

- ❑ 4 Nm

2 - Bolts

- ❑ 4 Nm
- ❑ Quantity: 2

3 - Wiring Bracket

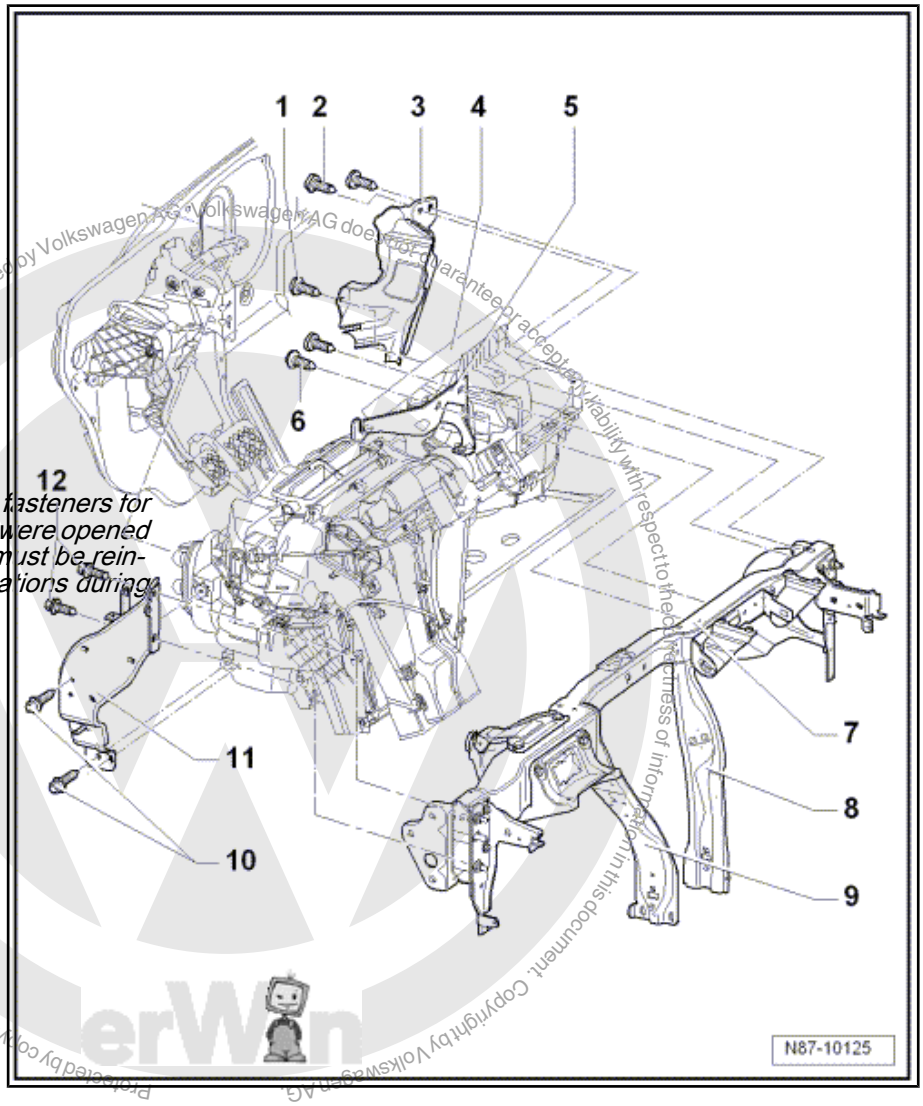
4 - Heater

- ❑ Removing

– Disconnect the connectors from the heater.

Note

All cable ties and other fasteners for the wiring harness that were opened or cut during removal must be reinstalled at the same locations during installation.



– Remove the bolts -item 6- ⇒ Item 6 (page 24) from the bracket -item 5- ⇒ Item 5 (page 24) .

– Remove the supports -item 8- ⇒ Item 8 (page 24) and -item 9- ⇒ Item 9 (page 24) .

– Remove the bolts -item 10- ⇒ Item 10 (page 24) and -item 12- ⇒ Item 12 (page 24) and remove the bracket -item 11- ⇒ Item 11 (page 24) .

– Remove the bolts -item 1- ⇒ Item 1 (page 23) and -item 2- ⇒ Item 2 (page 23) from the cable bracket -item 3- ⇒ Item 3 (page 23) .

Note

- *In order to reach the bolt -item 1- ⇒ Item 1 (page 23) , the heater on driver side must be pulled out slightly from the bulkhead.*
- *When removing the heater, make sure that both coolant pipes from the heater core do not get caught and bent or damaged on plenum chamber or noise insulation pan.*
- *Pay attention to wiring harness, individual wiring connections may get damaged if pulled too forcefully.*

– Remove the heater.

Installing

Install in reverse order of removal. Note the following:

Note

A second technician is necessary to install the heater.

– A second technician should guide both coolant pipes to the heater core (from inside the engine compartment) through the seal as the heater is being installed. Refer to ⇒ Fig. ““Seal between Heater and Engine Compartment”“ , page 24 .

– Fill with coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Coolant System/ Coolant .

5 - Bracket

6 - Bolts

- ❑ 8 Nm

7 - Subframe

8 - Right Support

9 - Left Support

10 - Bolts

- ❑ 8 Nm
- ❑ Quantity: 2

11 - Bracket

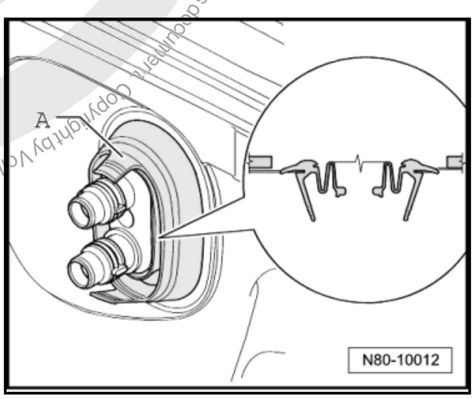
12 - Bolts

- ❑ 8 Nm
- ❑ Quantity: 2

Seal between Heater and Engine Compartment

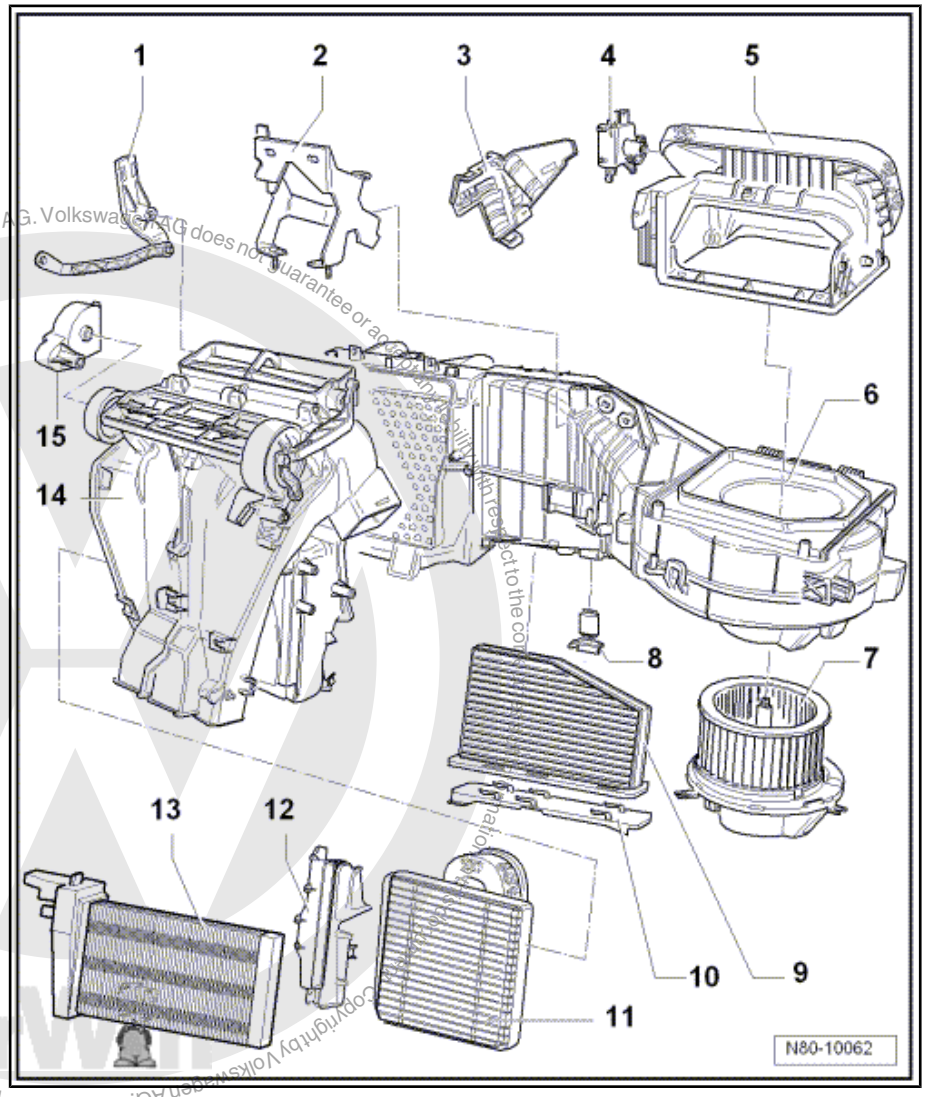
Note

Note installation position of seal -A- during assembly.



2 Heater, Disassembling and Assembling

2.1 Heater, Disassembling and Assembling



1 - Temperature Control Door Adjuster

- ❑ Removing and installing. Refer to ⇒ “2.5 Temperature Door Adjuster, Removing and Installing”, page 29 .

2 - Bracket

3 - Cover

4 - Fresh/Recirculated Air Door Motor - V154-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.21 Fresh/Recirculated Air Door Motor V154 , Removing and Installing”, page 73 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

5 - Air Intake Housing

- ❑ With air recirculation door

6 - Heater

- ❑ Disassembling and assembling. Refer to ⇒ “2.3 Heater, Disassembling and Assembling”, page 28 .

7 - Fresh Air Blower - V2-

- ❑ Removing and installing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

8 - Fresh Air Blower Series Resistor with Fuse - N24-

- ❑ Removing and installing. Refer to
  ⇒ “1.3 Fresh Air Blower Series Resistor with Fuse N24 , Removing and Installing”, page 5 .

9 - Dust and Pollen Filter

- ❑ Removing and installing. Refer to ⇒ “1.4 Dust and Pollen Filter, Removing and Installing”, page 5 .

10 - Cover

- ❑ For dust and pollen filter

11 - Heater Core

- ❑ Heater Core, Removing and Installing. Refer to
  ⇒ “1.11 Heater Core, Removing and Installing”, page 14
- ❑ After replacing the heater core, replace all the coolant. Refer to ⇒ Rep. Gr. 19 .

12 - Heater Core Trim Panel

13 - Auxiliary Heater Heating Element - Z35-

Vehicles from 1K-7M 119 726

- ❑ With Auxiliary Air Heater Control Module - J604-
- ❑ Checking using Vehicle Diagnostic Tester under Heating, Ventilation and Air Conditioning; OBD-Capable Systems; Auxiliary Heater; Electrical Components.
- ❑ Removing and installing. Refer to
  ⇒ “1.12 Auxiliary Heater Heating Element Z35 , Removing and Installing, Vehicles through 1K-7M 119 726”, page 17 .

Vehicles from 1K-7M 119 726

- ❑ A 3-stage Auxiliary Heater Heating Element - Z35- is installed here. It is activated by the respective engine control module via a relay.
- ❑ Only installed on vehicles with a diesel engine without an auxiliary heater
- ❑ Removing and installing. Refer to
  ⇒ “1.13 Auxiliary Heater Heating Element Z35 , Checking, Removing and Installing, Vehicles from 1K-7M 119 727”, page 18 .

14 - Air Distribution Housing

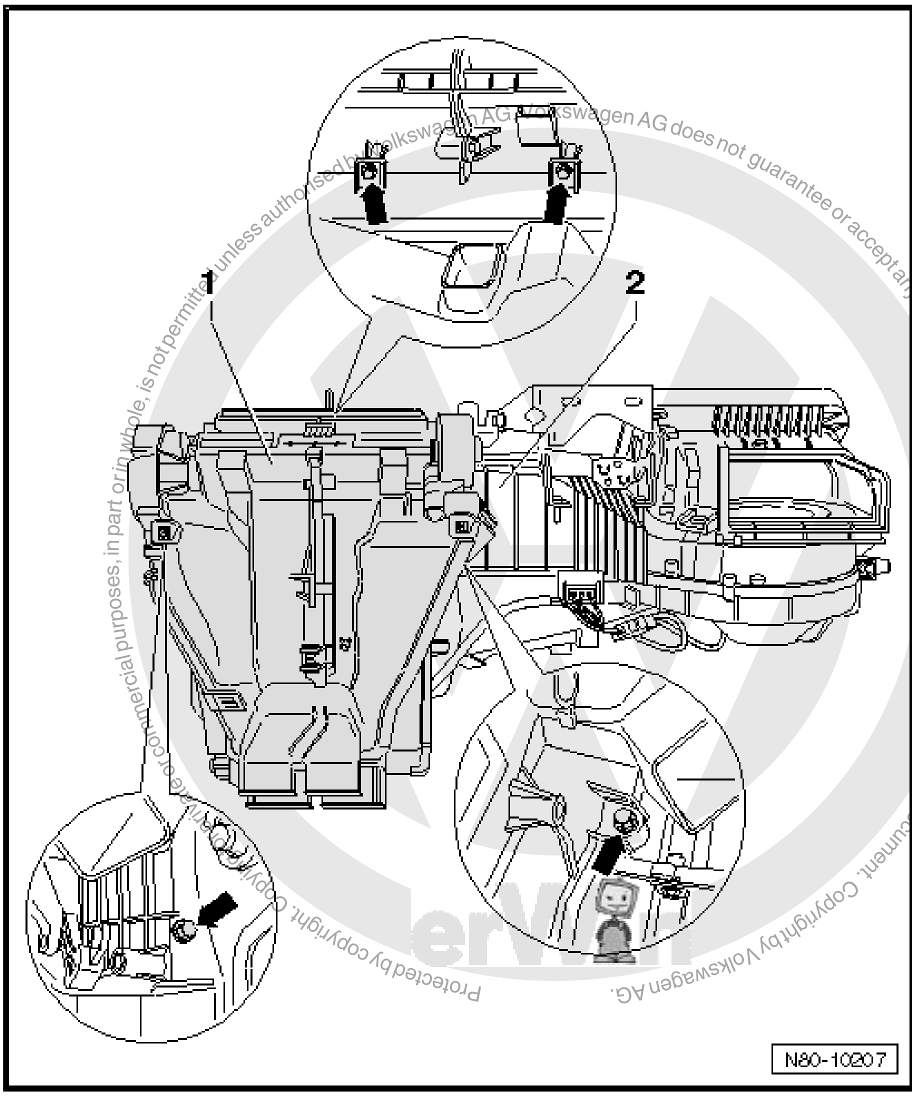
- ❑ Removing and installing. Refer to ⇒ “2.2 Air Distribution Housing, Removing and Installing”, page 26 .

15 - Adjuster for Air Distribution Doors

- ❑ Removing and installing. Refer to
  ⇒ “2.4 Adjuster for Air Distribution Control Doors, Removing and Installing”, page 29 .

2.2 Air Distribution Housing, Removing and Installing

Removing



- Remove the heater. Refer to ⇒ “1.16 Heater, Removing and Installing”, page 21 .
- Disconnect any existing connectors on the air distribution housing.
- Remove the heater core along with the coolant pipes:
- Heater Core, Removing and Installing. Refer to ⇒ “1.11 Heater Core, Removing and Installing”, page 14
- Remove the screws -arrows- 1.4 Nm.
- Remove the air distribution housing -1- from the heater -2-.

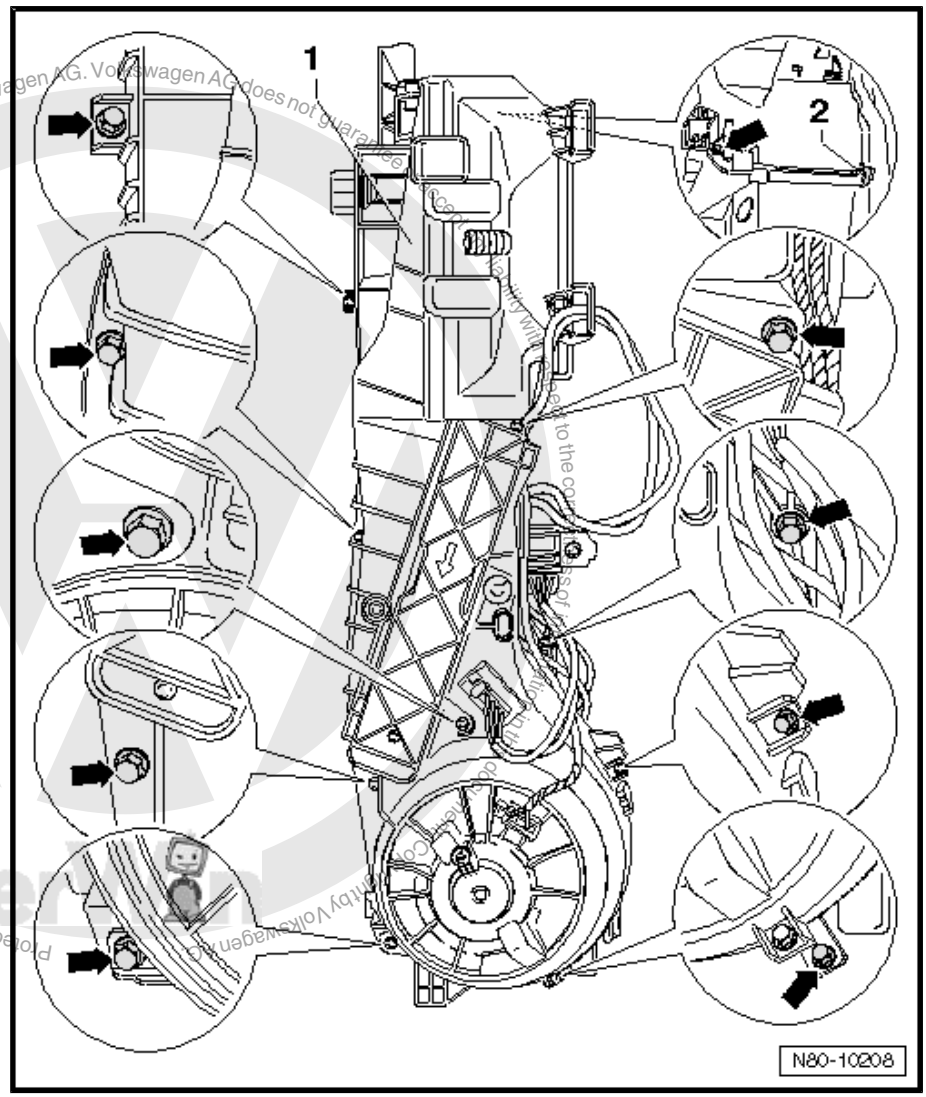
Installing

Install in reverse order of removal.

2.3 Heater, Disassembling and Assembling

⇒ “2.3.1 Disassembling and Assembling”, page 28

2.3.1 Disassembling and Assembling



– Remove the heater. Refer to ⇒ “1.16 Heater, Removing and Installing”, page 21 .
– Remove the air distribution housing. Refer to ⇒ “2.2 Air Distribution Housing, Removing and Installing”, page 26 .
– Loosen the clips -2- and the bolts -arrows- from the heater.
– Remove the heater.

Assembling

Assemble in reverse order of removal.

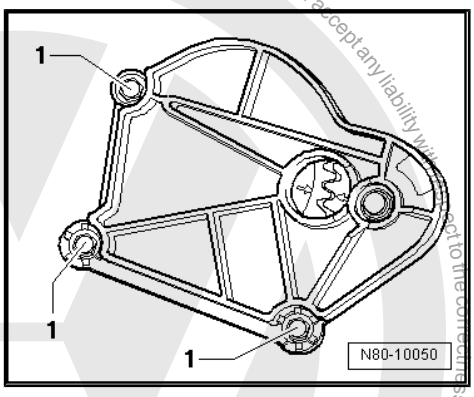
2.4 Adjuster for Air Distribution Control Doors, Removing and Installing

Removing

– Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .

– Unclip flexible shaft from adapter for controls. Refer to ⇒ "3.6 Flexible Shaft", page 47 .

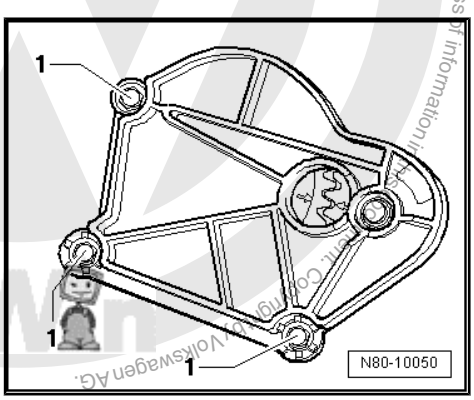
– Unscrew bolts -1- and remove the adjusting unit for the air distribution doors.



Installing

– The arrows on the gears must align.

– Position the adjusting unit for air distribution doors and tighten bolts -1-.



Note

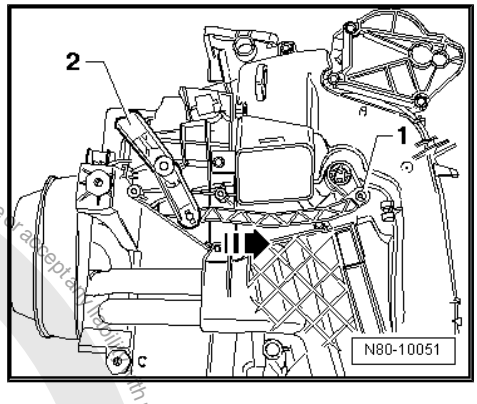
After installing, the function of air distribution doors must be checked. Refer to ⇒ "3.6.2 Flexible Shaft, Checking", page 47 .

2.5 Temperature Door Adjuster, Removing and Installing

Removing

– Remove the driver side footwell trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels .

– Remove the left footwell vent. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .
– Unclip the cable at the adjusting unit for temperature door -2-.
– Loosen the locking mechanism -1- and press the temperature control door adjuster in the direction of -arrow- until it stops.
– Remove the temperature control door adjuster.



Installing

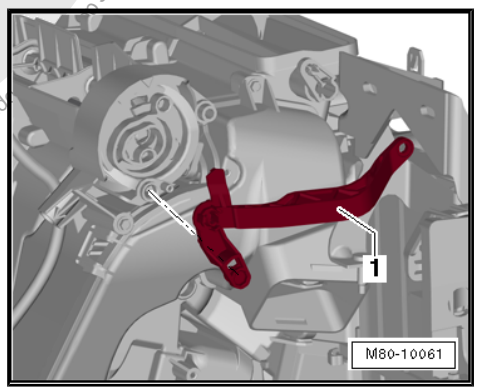
Install in reverse order of removal.

Note

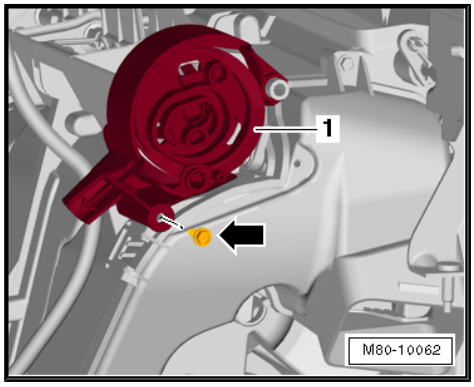
After installing, the function of the temperature control door must be checked. The temperature knob on heating and ventilation controls must be able to be moved easily and without catching from the “cold” to “warm” position.

2.6 Air Distribution Housing Lever, Removing and Installing

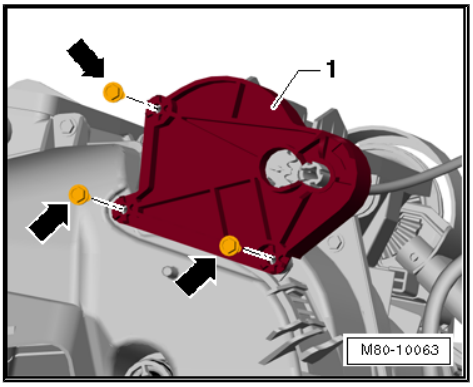
– Remove the instrument panel crossmember. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel Central Tube .
– Remove the air distribution housing lever -1-.



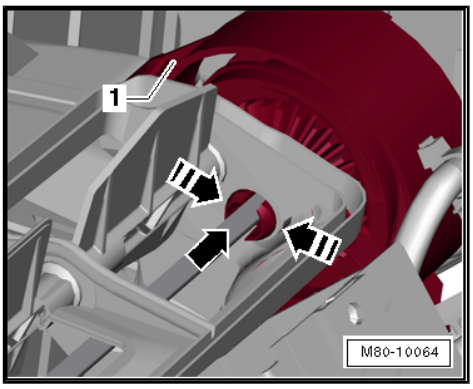
– Remove the bolt -arrow-.
– Remove the bolts -arrows-.



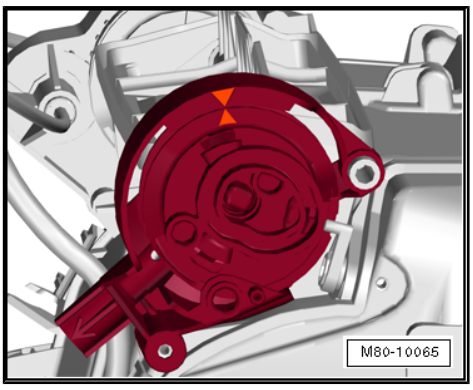
– Remove the bracket -1-.



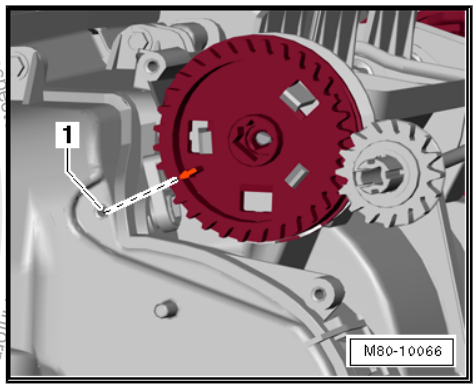
– Press the tabs together in the direction of -arrows- with a suitable pair of pliers and remove the shafts together with the drive -1-.



Make sure when assembling that the -arrow markings- are aligned.

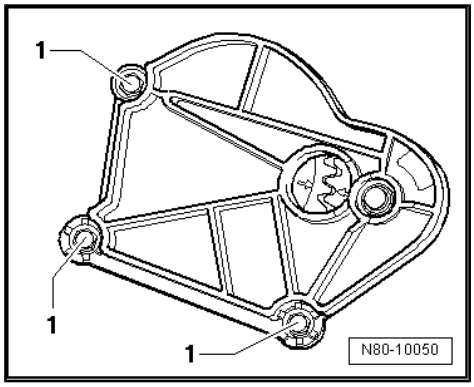


The -arrow- on the tooth wheel must point towards the opening -1-.



Further assembly is performed in the reverse order of removal.

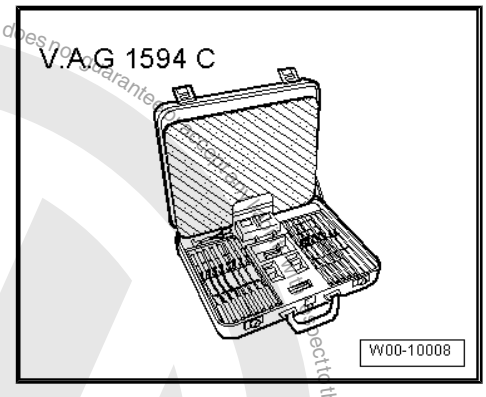
– The arrows on the gears must align.
– Position the adjusting unit for air distribution doors and tighten bolts -1-.



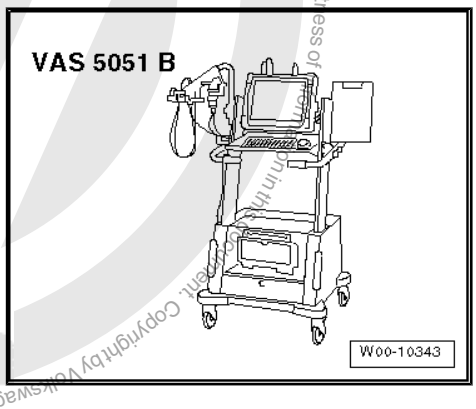
3 Special Tools

Special tools and workshop equipment required

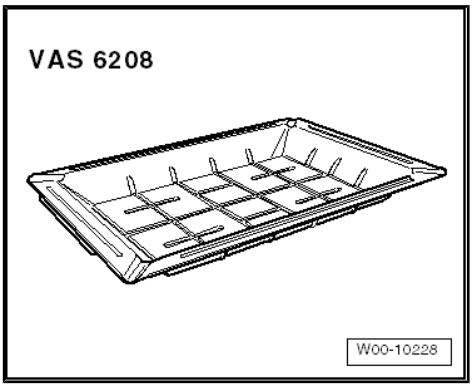
- Connector Test Set - VAG1594C-



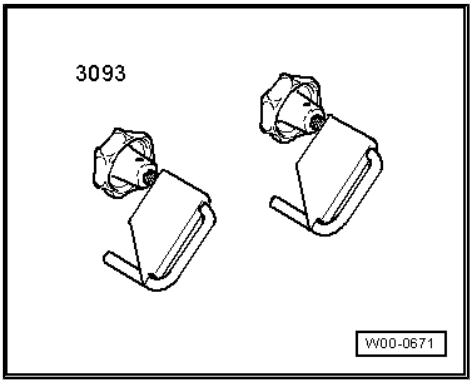
- Vehicle Diagnosis System - Trigger Clamp - 100A - VAS5051B/7-
-



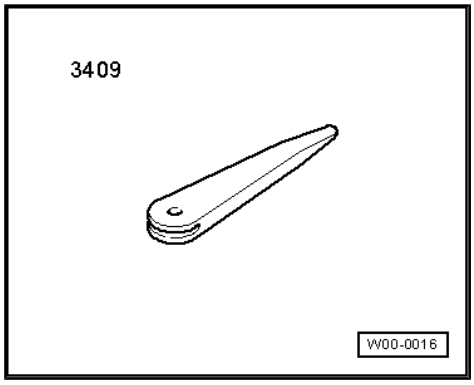
- Shop Crane - Drip Tray - VAS6208-



- Hose Clamps - Up To 40mm - 3093-



- Trim Removal Wedge - 3409-



87 – Air Conditioning

1 Repairing Vehicles Equipped with A/C and Handling Refrigerants

Note

- *Information on repair work in vehicles with climate control system and on handling refrigerant can be found in ELSA. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- *Information on tools for repairs in vehicles with climate control system and on handling refrigerant can be found in ELSA. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; A/C System, General Information .*
- *The version under the Internet button in ELSA is no longer applicable.*

Further Information:

- Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations
- Repair work on evacuated refrigerant circuit, which must only be performed in the workshop by experienced technicians using special equipment. Refer to Handbook Service Organization (HSO) Volume 1a; Chapter 6. 4 Special tools and equipment.

2 Vehicles with Start/Stop System General Information

If the vehicle has a start-stop system, perform the following termination conditions to deactivate the start-stop function:

- The Start/Stop system was turned off with the Start/Stop mode button.
- The battery charge level does not make it possible to start the engine again (start voltage prediction).
- The defrost function is active.
- The windshield defogger is active.
- The selected temperature deviates more than 8 °C (46.4 °F) from the actual temperature inside the vehicle.
- The engine speed exceeds 1200 RPM.
- The Generator - C- is faulty, for example, the ribbed belt is torn.
- The coolant temperature is not in the specified range of 25 to 100 °C (77 to 212 °F).
- Increasing the blower speed by more than four increments.

Further Information

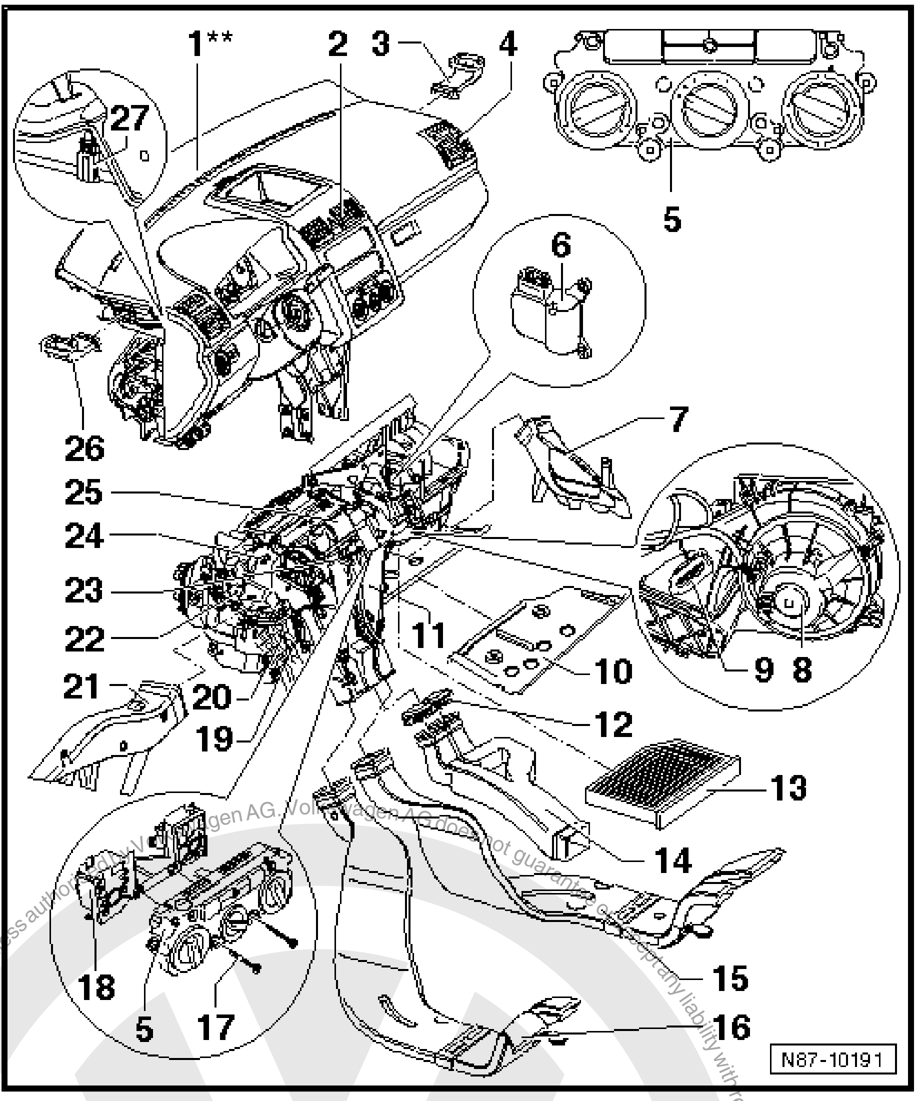
- Refer to Self Study Program 426 Start/Stop System 2009 for more information.

3 A/C System with Manual Control

3.1 Passenger Compartment A/C and Heating System

Note

- *Disconnect the battery before removing any components marked with **. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery .*
- *A data plate indicates the refrigerant used and capacity.*



1 - Instrument Panel **

2 - Center Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.1 Center Vents, Removing and Installing, Golf Wagon from MY 2007 and Jetta from MY 2005”, page 6 .

3 - Right Side Vent

4 - Right Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.3 Right or Left Vent, Removing and Installing”, page 7 .

5 - Heater and A/C System Controls

- ❑ With Fresh Air/Recirculation Door Switch - E159-
- ❑ with Rear Window Defogger Button - E230-
- ❑ with Fresh Air Blower Switch - E9-
- ❑ with A/C Control Module - J301-
- ❑ Also with Immediate Heating Button - E537- in vehicles with auxiliary heater
- ❑ Removing and installing. Refer to ⇒ “3.4 Heater and A/C System Controls, Removing and Installing, Manual Climate Control System”, page 45 .

6 - Recirculation Door Motor - V113-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “3.8 Recirculation Door Motor V113 , Removing and Installing”, page 48 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

7 - Right Footwell Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.5 Right Footwell Vent, Removing and Installing”, page 8 .

8 - Fresh Air Blower - V2-

- ❑ Removing and installing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

9 - Fresh Air Blower Series Resistor with Fuse - N24-

- ❑ Removing and installing. Refer to ⇒ “1.3 Fresh Air Blower Series Resistor with Fuse N24 , Removing and Installing”, page 5 .

10 - Heater Partition

- ❑ Removing. Refer to ⇒ Fig. ““Removing the Heater Partition”“, page 4 .

11 - Evaporator Temperature Sensor - G308-

- ❑ Removing and installing. Refer to ⇒ “4.15 Evaporator Temperature Sensor G308 , Removing and Installing”, page 71 .

12 - Closure Caps

❑ Only in vehicles without the air guide to the vent installed in the rear center console

13 - Dust and Pollen Filter

❑ With activated charcoal filter

❑ Removing and installing. Refer to ⇒ “1.4 Dust and Pollen Filter, Removing and Installing”, page 5 .

14 - Connection

❑ For center console air guide

❑ To remove, the center console must be removed. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console .

15 - Right Footwell Rear Channel

❑ Removing and installing. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

16 - Left Footwell Rear Channel

❑ Removing and installing. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

17 - Screw

❑ Quantity: 8

18 - Adapter for Controls

19 - Auxiliary Heater Heating Element - Z35-

❑ Only on vehicles with a diesel engine without an auxiliary water heater

❑ Removing and installing. Refer to ⇒ “1.12 Auxiliary Heater Heating Element Z35 , Removing and Installing, Vehicles through 1K-7M 119 726”, page 17 .

20 - Heater Core

❑ Heater Core, Removing and Installing. Refer to ⇒ “1.11 Heater Core, Removing and Installing”, page 14

❑ After replacing the heater core, replace all the coolant. Refer to ⇒ Rep. Gr. 19 .

21 - Left Footwell Vent

❑ Removing and installing. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

22 - Temperature Control Door Motor - V68-

❑ Check using the Vehicle Diagnostic Tester

❑ Removing and installing. Refer to ⇒ “3.9 Temperature Control Door Motor V68 , Removing and Installing”, page 49 .

❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

23 - Flexible Shaft

❑ Removing and installing. Refer to ⇒ “3.6 Flexible Shaft”, page 47 .

24 - Footwell Vent Temperature Sensor - G192-

❑ Removing and installing. Refer to ⇒ “3.10 Footwell Vent Temperature Sensor G192 , Removing and Installing”, page 50 .

25 - Heater and A/C Unit

❑ Removing and installing. Refer to ⇒ “3.2 Heater and A/C Unit, Removing and Installing (Manual Climate Control System)”, page 40 .

❑ Disassembling and assembling. Refer to ⇒ “3.3 Heater and A/C Unit, Disassembling and Assembling (Manual Climate Control System)”, page 44 .

26 - Left Side Vent

27 - Center Vent Temperature Sensor - G191-

❑ Removing and installing. Refer to ⇒ “3.11 Center Vent Temperature Sensor G191 , Removing and Installing”, page 51 .

3.2 Heater and A/C Unit, Removing and Installing (Manual Climate Control System)

⇒ “3.2.1 Removing and Installing”, page 40

3.2.1 Removing and Installing

Special tools and workshop equipment required

- Shop Crane - Drip Tray - VAS6208-
- Hose Clamps - Up To 40 mm - 3093-
- A/C Service Station - VAS6007A-
- Hose Clamps - Up To 40mm - 3093-
- Compressed air gun, commercially available

Note

To improve accessibility, additional components, for example, the engine cover, must be removed (depending on engine version). Refer to ⇒ Maintenance ; Booklet 20.1 ; Upper Engine Cover, Removing and Installing .

– Extract the refrigerant, using for example the -VAS6007A- , only then open the refrigerant circuit. See notes. Refer to ⇒ “1 Repairing Vehicles Equipped with A/C and Handling Refrigerants”, page 35 .

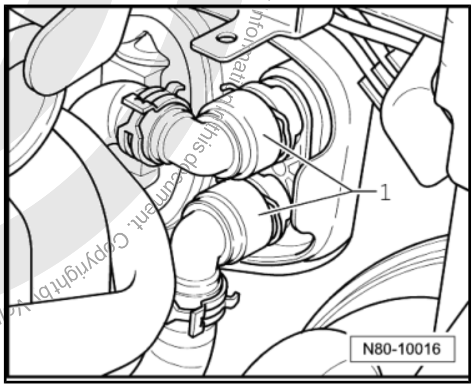
– Remove the instrument panel. Refer to ⇒ Rep. Gr. 70 .

– Remove the bulkhead in the plenum chamber. Refer to ⇒ Rep. Gr. 50 .

– Remove the rear channels from the right and left footwells. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7

– Place the -VAS6208- under the engine.

– Mark the coolant hoses -1-.



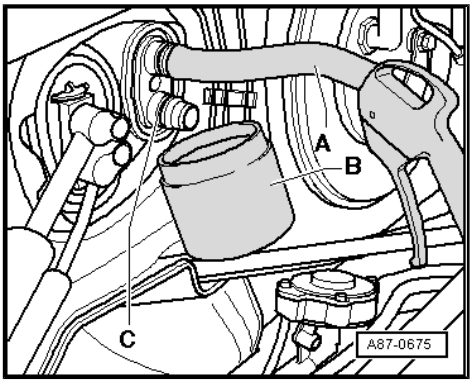
WARNING

The coolant system is under pressure when the engine is warm!

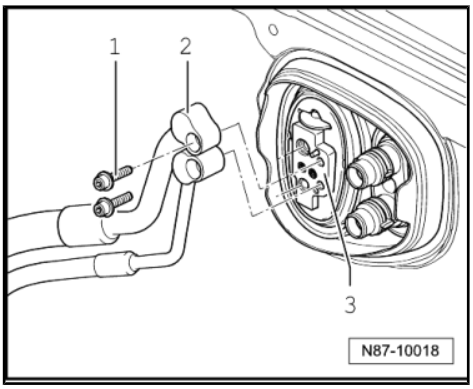
There is a risk of scalding from hot steam and coolant.

To reduce the pressure, cover the coolant reservoir cap with cloth and then open it carefully.

– Clamp the coolant hoses -1- using the -3093- and disconnect the coolant hoses from the heater core.
– Connect a section of hose -A- to the upper connection.
– Hold a container -B- under the lower connection -C-.



– Using a compressed air gun, carefully blow residual coolant out of heater core at heater core connection.



WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- *Evacuate the refrigerant and immediately open the refrigerant circuit afterward.*
- *If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.*

– From inside the engine compartment, remove the bolts (12 Nm), -1- from the refrigerant pipes -2-.
– Remove the refrigerant lines from the expansion valve -3-.

Note

- *Seal open pipe connections.*
- *To seal off all open connections on expansion valve, sealing caps from a replacement expansion valve can be used.*

– Cover the carpet inside the passenger compartment with waterproof foil and water absorbing paper.

Note

When removing, record the bolt lengths and allocation for the reinstallation.

1 - Bolt

- ❑ 4 Nm

2 - Bolts

- ❑ 4 Nm
- ❑ Quantity: 2

3 - Wiring Bracket

4 - Heater and A/C Unit

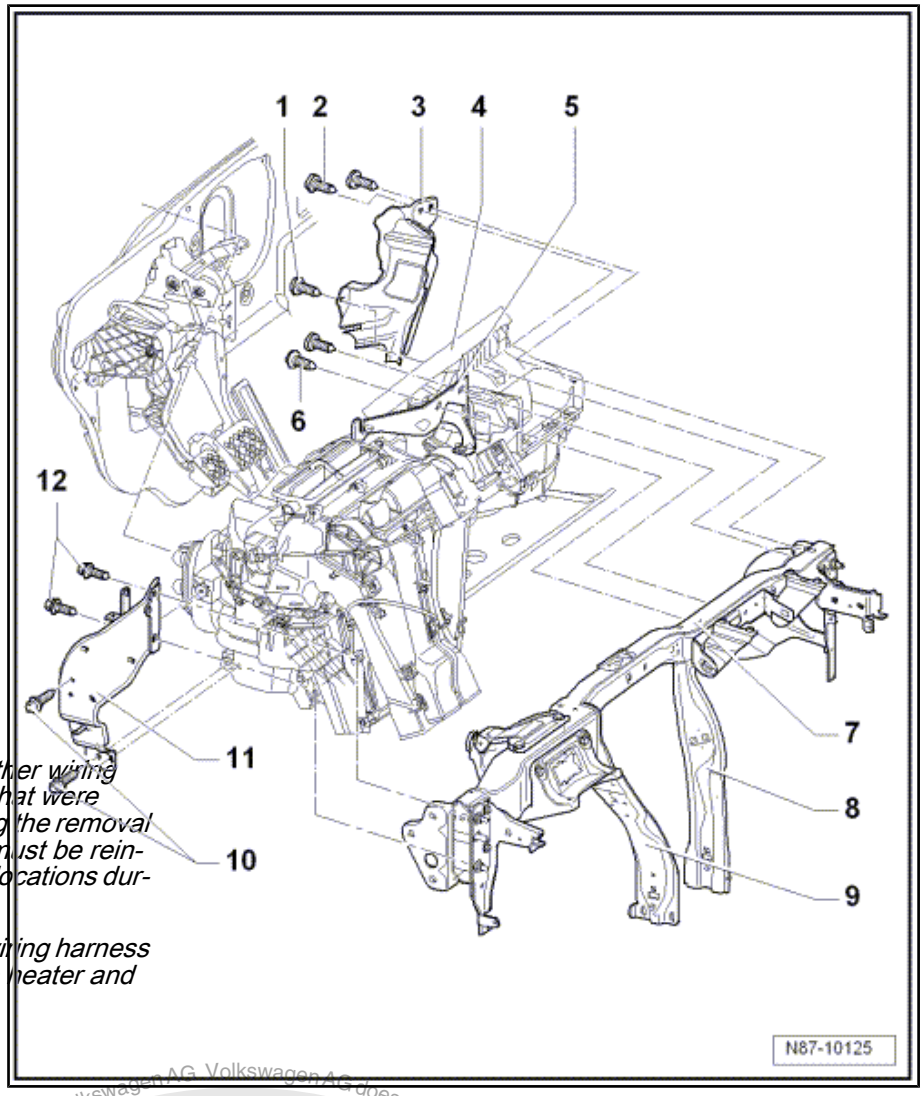
- ❑ Removing

– Remove the condensation water drain hose from the heater and A/C unit. Refer to ⇒ “4.19 Condensation Water Drain Hose on Heater and A/C Unit, Checking”, page 72 .

– Disconnect the connectors from the heater and A/C unit.

Note

- ♦ *All cable ties and other wiring harness fasteners that were opened or cut during the removal of the A/C system must be reinstalled at the same locations during installation.*
- ♦ *The "A/C system" wiring harness is removed with the heater and A/C unit.*



– Remove the bolts -item 6- ⇒ Item 6 (page 43) from the bracket -item 5- ⇒ Item 5 (page 43) .

– Remove the supports -item 8- ⇒ Item 8 (page 43) and -item 9- ⇒ Item 9 (page 43) .

– Remove the bolts -item 10- ⇒ Item 10 (page 43) and -item 12- ⇒ Item 12 (page 43) and remove the bracket -item 11- ⇒ Item 11 (page 43) .

– Remove the bolts -item 2- ⇒ Item 2 (page 42) and -item 1- ⇒ Item 1 (page 42) from the cable bracket -item 3- ⇒ Item 3 (page 42) .

Note

- ♦ *To be able to reach the screw -item 1- ⇒ Item 1 (page 42) , the heater and A/C unit on driver side must be pulled out slightly from the bulkhead.*
- ♦ *When removing the heater, make sure that both coolant pipes from the heater core do not get caught and bent or damaged on plenum chamber or noise insulation pan.*

♦ *Pay attention to wiring harness, individual wiring connections may get damaged if pulled too forcefully.*

– Remove the heater and A/C unit.

Installing

Install in reverse order of removal. Note the following:

Note

A second technician is necessary to install the heater.

– A second technician should guide both coolant pipes to the heater core (from inside the engine compartment) through the seal as the heater is being installed. Refer to ⇒ Fig. ""Seal for Heater and A/C Unit / Engine Compartment"" , page 43 .

– Make sure the condensation water drain hose is seated correctly. Refer to ⇒ "4.19 Condensation Water Drain Hose on Heater and A/C Unit, Checking", page 72 .

– Fill with coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Coolant System/ Coolant .

5 - Bracket

6 - Bolts

❑ 8 Nm

7 - Subframe

8 - Right Support

9 - Left Support

10 - Bolts

❑ 8 Nm

❑ Quantity: 2

11 - Bracket

12 - Bolts

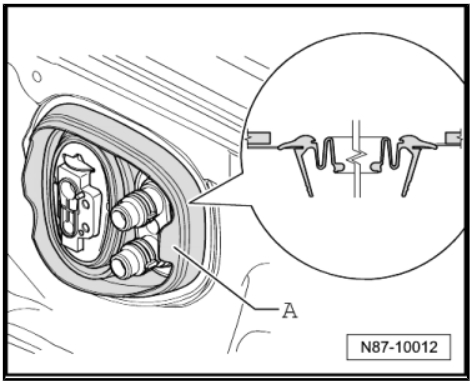
❑ 8 Nm

❑ Quantity: 2

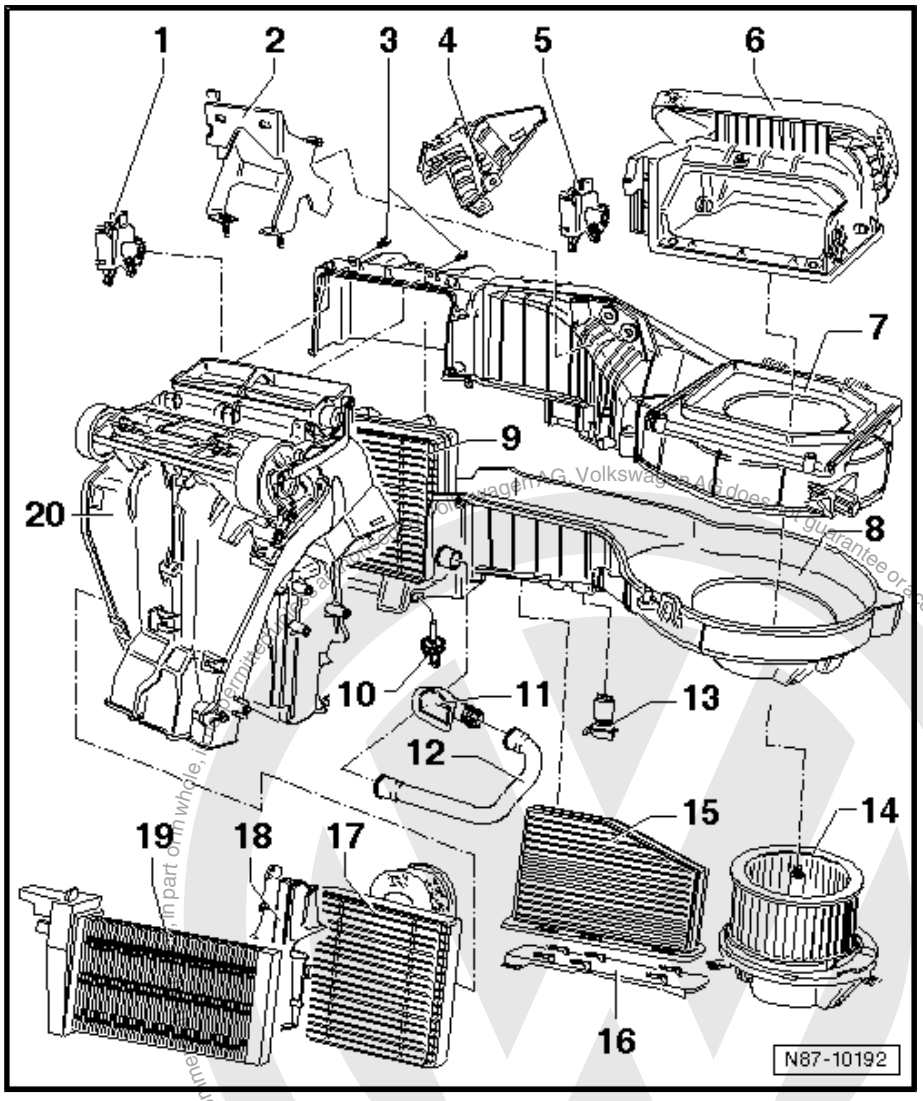
Seal for Heater and A/C Unit / Engine Compartment

Note

Note installation position of seal -A- during assembly.



3.3 Heater and A/C Unit, Disassembling and Assembling (Manual Climate Control System)



1 - Temperature Control Door Motor - V68-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “3.9 Temperature Control Door Motor V68 , Removing and Installing”, page 49 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

2 - Bracket

3 - Bolts

- ❑ It is necessary to remove the bolts in order to separate the bracket from the air distribution and evaporator housing.

4 - Cover

5 - Recirculation Door Motor - V113-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “3.8 Recirculation Door Motor V113 , Removing and Installing”, page 48 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

6 - Air Intake Housing

- ❑ With air recirculation door

7 - Evaporator Housing Upper Section

- ❑ Evaporator housing, disassembling and assembling. Refer to ⇒ “4.10 Evaporator Housing, Disassembling and Assembling”, page 68 .

8 - Evaporator Housing Lower Section

- ❑ Evaporator housing, disassembling and assembling. Refer to ⇒ “4.10 Evaporator Housing, Disassembling and Assembling”, page 68 .

9 - Evaporator

- ❑ Removing and installing. Refer to ⇒ “6.11 Evaporator, Removing and Installing”, page 103 .

10 - Evaporator Temperature Sensor - G308-

- ❑ Removing and installing. Refer to ⇒ “4.15 Evaporator Temperature Sensor G308 , Removing and Installing”, page 71 .

11 - Glove Compartment Cooling Connection

12 - Glove Compartment Cooling Coolant Hose

13 - Fresh Air Blower Series Resistor with Fuse - N24-

- ❑ Removing and installing. Refer to ⇒ “1.3 Fresh Air Blower Series Resistor with Fuse N24 , Removing and Installing”, page 5 .

14 - Fresh Air Blower - V2-

- ❑ Removing and installing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

15 - Dust and Pollen Filter

- ❑ With activated charcoal filter
- ❑ Removing and installing. Refer to ⇒ “1.4 Dust and Pollen Filter, Removing and Installing”, page 5 .

16 - Cover

- ❑ For dust and pollen filter

17 - Heater Core

- ❑ After replacing the heater core, replace all the coolant. Refer to ⇒ Rep. Gr. 19 .
- ❑ Heater Core, Removing and Installing. Refer to ⇒ “1.11 Heater Core, Removing and Installing”, page 14

18 - Heater Core Trim Panel

19 - Auxiliary Heater Heating Element - Z35-

- ❑ Only on vehicles with a diesel engine without an auxiliary heater.
- ❑ Removing and installing. Refer to ⇒ “1.12 Auxiliary Heater Heating Element Z35 , Removing and Installing, Vehicles through 1K-7M 119 726”, page 17 .

20 - Distribution Housing

3.4 Heater and A/C System Controls, Removing and Installing, Manual Climate Control System

⇒ “3.4.1 Removing and Installing”, page 45

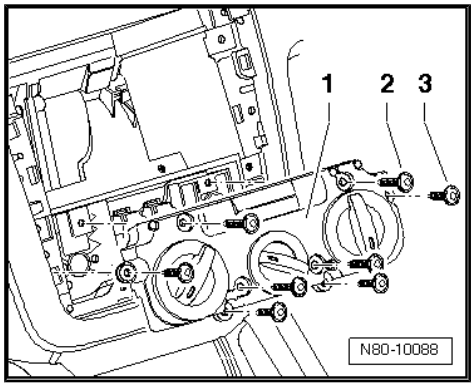
3.4.1 Removing and Installing

Note

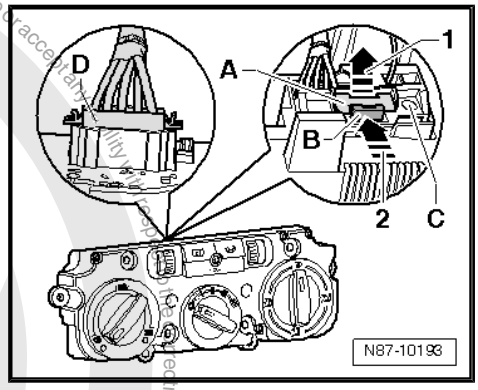
- *The controls consist of two separable housings. Before removing controls, bring the knobs into the following position:*
- *Heater control to “cold”*
- *Blower to “0”*
- *Air flow direction to “footwell”*

– Remove the radio. Refer to ⇒ Communication; Rep. Gr. 91 ; Radio .

– If the vehicle does not have a radio, remove the center instrument panel trim. Refer to ⇒ Rep. Gr. 68 .



– Remove the bolts -2- (4.2 x 45) and -3- (4.2 x 16) and the controls -1- from the center console.
– Release the connector lock -A- by pulling it in the direction of the -arrow 1-.
– Press the connector lock -B- toward the connector in direction of -arrow 2- and remove the connector -C-.
– Loosen the connector lock -D- and remove the connector -D-.



Installing

Install in reverse order of removal. Be sure install the control knobs in the same position they were in when they were removed.

3.5 Heater and A/C System Control Connectors, Manual Climate Control System

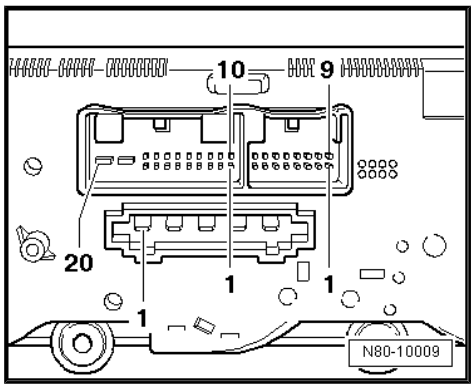
⇒ "3.5.1 Multi-Pin Connectors on Rear of Heater and A/C System Controls, Pin Assignment, Manual Climate Control System", page 46

3.5.1 Multi-Pin Connectors on Rear of Heater and A/C System Controls, Pin Assignment, Manual Climate Control System

Special tools and workshop equipment required

♦ Test Box Kit - Adapter 47 - VAG1598/47-

20-Pin Harness Connector, in Wiring Diagram T20c



3 - Center Vent Temperature Sensor - G191-

5 - High Pressure Sensor - G65-

7 - CAN Low

8 - CAN High

12 - Right Seat Heating (optional)

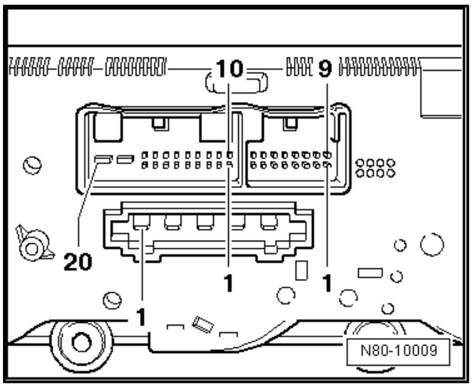
13 - Left Seat Heating (Optional)

15 - Seat Heating Terminal 75 (optional)

16 - A/C Compressor Regulator Valve - N280-

19 - Terminal 30A

20 - Terminal 31



16-Pin Harness Connector, in Wiring Diagram T16e

1 - Temperature Regulator Door Motor - V68- , warm

2 - Evaporator Vent Temperature Sensor - G263-

4 - Footwell Vent Temperature Sensor - G192-

5 - Temperature Regulator Door Motor Position Sensor - G92-

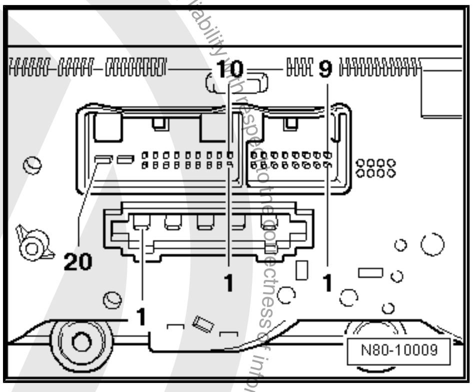
7 - + 5 V for Temperature Regulator Door Motor Position Sensor - G92-

8 - Ground for Temperature Regulator Door Motor Position Sensor - G92- , Center Vent Temperature Sensor - G191- , Footwell Vent Temperature Sensor - G192- and Evaporator Vent Temperature Sensor - G263-

9 - Recirculation Door Motor - V113- , Open

10 - Recirculation Door Motor - V113- , Closed

11 - Temperature Regulator Door Motor - V68- , Cold



5-Pin Harness Connector, in Wiring Diagram T5

1 - 3. Blower Speed

2 - 2. Blower Speed

3 - 1. Blower Speed

4 - 4. Blower Speed

5 - Terminal X

3.6 Flexible Shaft

⇒ “3.6.1 Flexible Shaft, Removing and Installing”, page 47

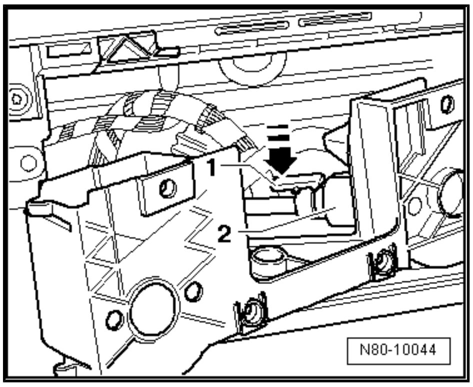
⇒ “3.6.2 Flexible Shaft, Checking”, page 47

3.6.1 Flexible Shaft, Removing and Installing

– Remove the heater and A/C system controls. Refer to ⇒ “3.4 Heater and A/C System Controls, Removing and Installing, Manual Climate Control System”, page 45 .

– Carefully pull out the adapter for the controls.

– Press in the flexible shaft retaining tab in direction of -arrow- and remove flexible shaft.



Note

When installing the flexible shaft, the adapter and the heater and A/C system controls must have a specific position to each other. Otherwise they will malfunction.

3.6.2 Flexible Shaft, Checking

Flexible shaft for adjusting unit of air distribution doors:

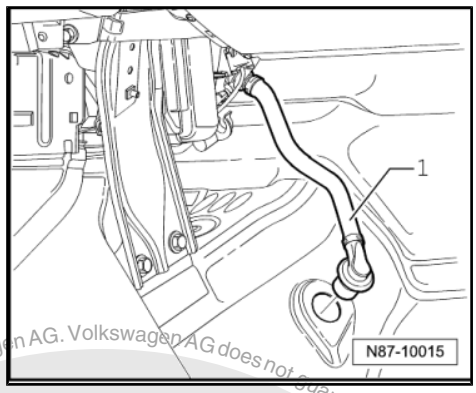
– Let fresh air blower run on highest speed. If air flows out of defroster vents in the “Defrost” position and no air flows out of footwell vents, the installation of the flexible shaft is correct. If this is not the case, remove the flexible shaft from the adapter. Place the heater and A/C system controls onto the adapter and rotate the air distribution control a $^{1}/_{2}$ rotation (180°). Then reconnect the flexible shaft. Repeat the test.

3.7 Condensation Water Drain Hose on Heater and A/C Unit, Checking

– Remove the footwell cover from the front passenger side.

Note

- *The condensation water drain hose -1- must be able to be connected to the heater and a/c unit connection without pre-tension.*
- *The condensation water drain hose must sit securely on the heater and A/C unit connection condensation water drain.*



3.8 Recirculation Door Motor - V113- , Removing and Installing

⇒ “3.8.1 Recirculation Door Motor V113 , Removing and Installing”, page 48

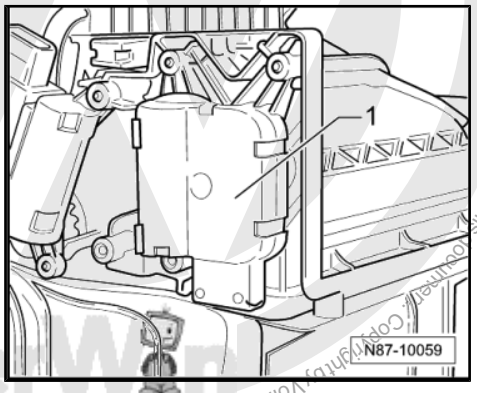
3.8.1 Recirculation Door Motor - V113- , Removing and Installing

– Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .

– Remove the cover for the actuators.

– Disconnect the connector from the Recirculation Door Motor - V113- -1-.

– Remove the Recirculation Door Motor - V113- -1-.



Installing

Install in reverse order of removal.

Note

- *After installing, the recirculation door function must be checked.*
- *Initiate the “basic setting” using the Vehicle Diagnostic Tester. Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .*

3.9 Temperature Control Door Motor - V68- , Removing and Installing

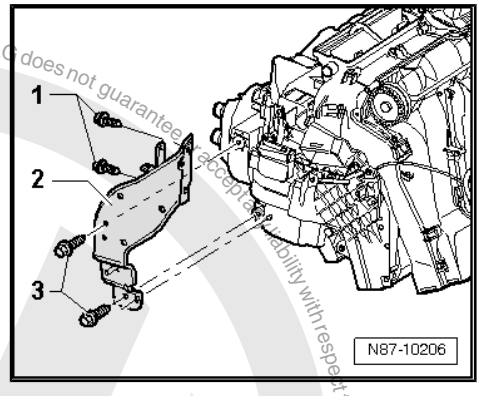
Removing

– Remove the left footwell vent. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

– Remove the left footwell trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Vehicle Interior Trim Panels .

– Remove the Data Bus On Board Diagnostic Interface - J533- . Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Control Modules .

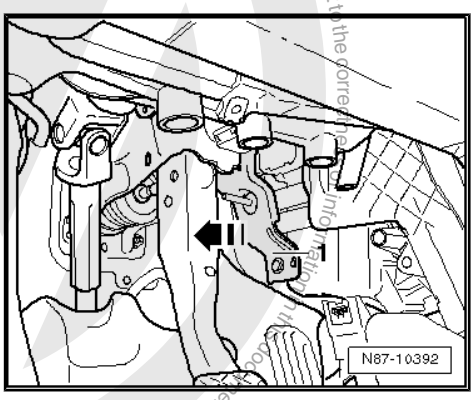
– Remove the bolts -3- (9 ± 1.3 Nm).



The bolts -1- are not to be removed.

– Do not remove the bracket -2-.

– Push the bracket -1- toward the brake pedal in direction of -arrow- and secure it there with a cable tie.



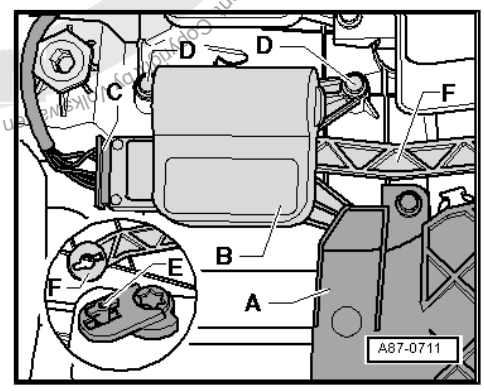
– Mark the connector -C- for the motor (danger of confusing it with other connectors that may look the same).

– Disconnect the connector -C- on the Temperature Control Door Motor - V68- .

– Remove the cover -A-.

– Remove the screws -D- 1.4 Nm and the Temperature Control Door Motor - V68- -B-.

– Disconnect the lever -E- from the connecting rod -F-.



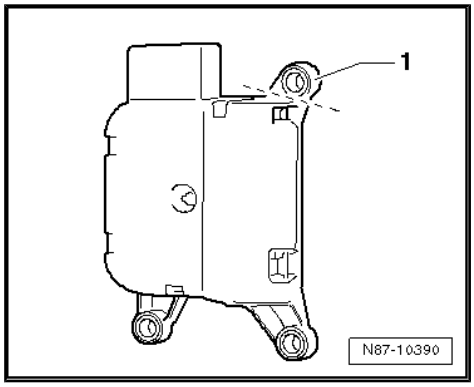
Installing

Note

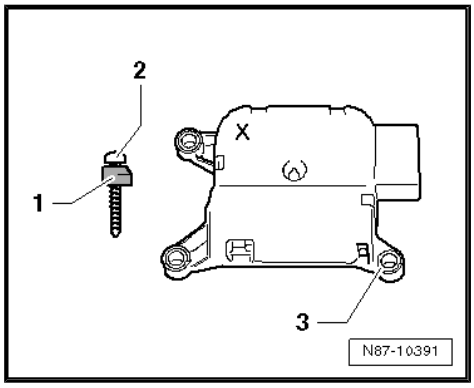
Optimal adjustment motors are marked with an “X”.

For easier assembly, use a Raised Head Screw - N 103 254 01- that has been shortened to approximately 2 mm.

– Remove the mount -1- from the old Temperature Regulator Door Motor - V68- using for example a diagonal cutter.



– Attach the new Temperature Regulator Door Motor - V68- that is marked with an “X” to the mount -3- on the blower case using the shortened raised head screw -2- and the removed mount -1-.



Note

- *After installing, the function of the left temperature door must be checked.*
- *Initiate the “basic setting” using the Vehicle Diagnostic Tester . Refer to*
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

3.10 Footwell Vent Temperature Sensor - G192- , Removing and Installing

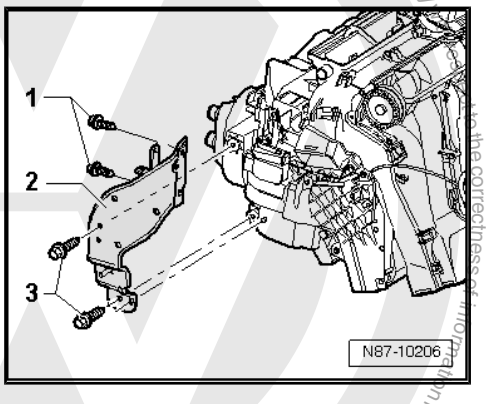
Removing

– Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .

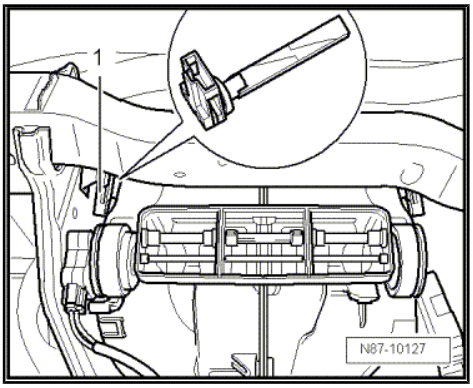
– Remove the Data Bus On Board Diagnostic Interface - J533- . Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Control Modules .

– Remove the left footwell vent. Refer to
⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

– Remove the bolts -1 and 3- (9 ± 1.3 Nm).



– Remove the bracket -2-.
– Disconnect the connector on the Footwell Vent Temperature Sensor - G192- -1-.
– Rotate the Footwell Vent Temperature Sensor - G192- 90° and remove it from the housing.



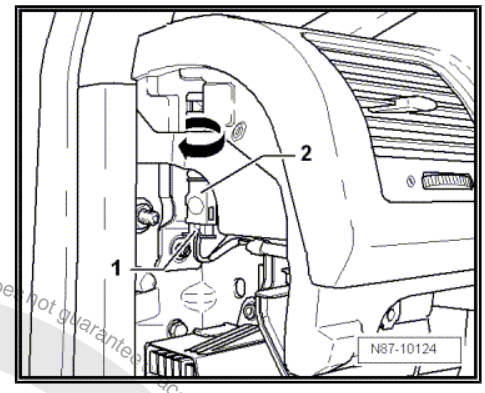
Installing

Install in reverse order of removal.

3.11 Center Vent Temperature Sensor - G191- , Removing and Installing

Removing

– Remove the cover on the left side of the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .
– Disconnect the connector on the Center Vent Temperature Sensor - G191- -1-.
– Turn the Center Vent Temperature Sensor - G191- -2- 90° in the direction of -arrow- and remove it from the instrument panel.



Installing

Install in reverse order of removal.

4 Climatronic A/C System with Automatic Control

⇒ “4.26 Central Air Door Motor V70 , Removing and Installing”, page 78

4.1 General Information

Note

- *Pressing the AUTO button will reverse all settings which deviate from the automatic operation.*
- *If there are differences from automatic operation, see the corresponding user guide.*
- *In “ECON” operation only the A/C compressor is set to almost zero delivery. The heating and ventilation continues to be controlled electronically.*

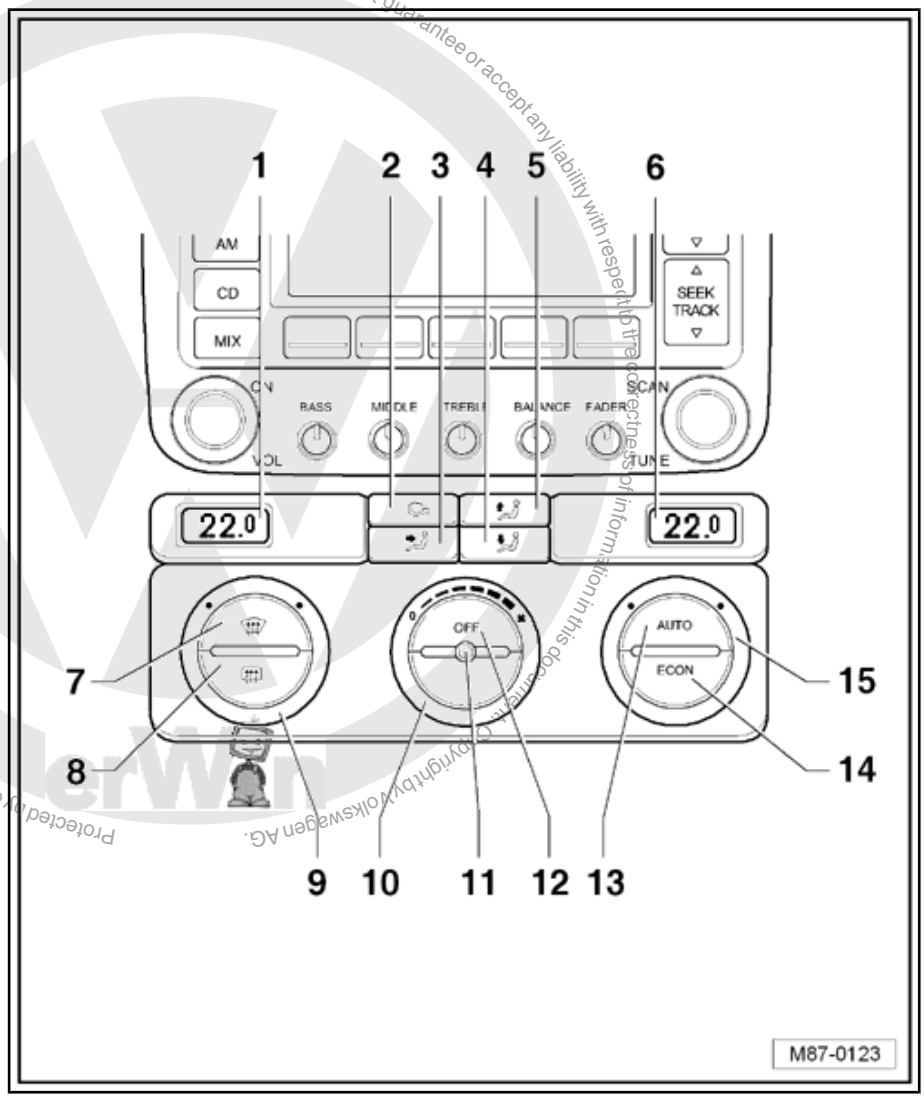
4.2 Procedure for Checking and Adjusting Components

Select “Guided Fault Finding” on the Vehicle Diagnostic Tester .

After all control modules have been checked:

– Press “GO TO”.
– Select “Function/component selection”.
– Select “Body”.
– Select “Heating, Ventilation, Air Conditioning (Repair Group 01; 80 to 87)”.
– Select “01 - On Board Diagnostic (OBD) capable systems”.
– Select “Climatronic” or “Climatic”.
– Select “Functions”
– Select “Basic setting”
– Select “Code the Climatronic control module”.
– Select “Check the cooling output.”
– Select “Read measured value block.”

4.3 Front A/C Display Control Head - E87- Function



1 - Selected Interior Temperature Display, Left

2 - Recirculating Air Mode Button

- ❑ Press the button for the recirculating air mode to prevent polluted air from entering the vehicle interior.

3 - Button - Center Air Distribution

4 - Button - Bottom Air Distribution

5 - Button - Top Air Distribution

6 - Selected Interior Temperature Display, Right

7 - Windshield Defrost Button

8 - Rear Window Defogger Button

9 - Left Interior Temperature Control

10 - Blower Control

- ❑ Change blower speed by turning.

11 - Interior Temperature Sensor

12 - Button for Heating, Ventilation and A/C Operation

13 - AUTO Button

- ❑ By pressing the AUTO button, the Climatronic maintains the selected vehicle interior temperature completely automatically. With this setting the vent air temperature, the blower speed and the air distribution are controlled automatically.

14 - ECON Button

- ❑ By pressing the ECON button, the A/C compressor is set to almost zero delivery. The heating and ventilation continues to be controlled electronically.

15 - Right Interior Temperature Control

4.4 Front A/C Display Control Head - E87- with Climatronic Control Module - J255- , Removing and Installing

Removing

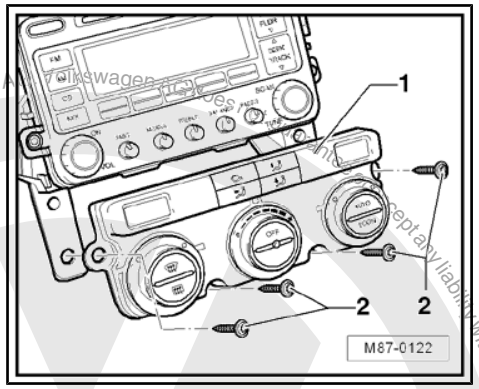
Note

- *Initiate the basic setting using the Vehicle Diagnostic Tester after replacing. Refer to* *⇒ "4.2 Procedure for Checking and Adjusting Components", page 54* .
- *The Climatronic Control Module - J255- and the Front A/C Display Control Head - E87- are one component that cannot be disassembled.*

– Remove the center instrument panel trim. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel

– Remove the bolts -2- and the Front A/C Display Control Head - E87- -1- from the instrument panel.

– Disconnect the connectors on the Front A/C Display Control Head - E87- .



Installing

Install in reverse order of removal.

Initiate the basic setting using the Vehicle Diagnostic Tester after replacing. Refer to ⇒ "4.2 Procedure for Checking and Adjusting Components", page 54 .

4.5 Climatronic Control Module - J255- Connectors

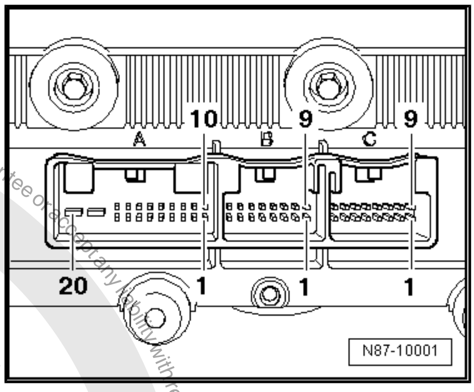
⇒ "4.5.1 Pin Assignment for Multi-Pin Connectors A, B and C on Rear of Climatronic Control Module J255 ", page 56

4.5.1 Pin Assignment for Multi-Pin Connectors A, B and C on Rear of Climatronic Control Module - J255-

Special tools and workshop equipment required

- Test Box Kit - Adapter 47 - VAG1598/47-

20-Pin Harness Connector, in Wiring Diagram T20c -A-



1 - Sunlight Photo Sensor 2 - G134- or Sunlight Photo Sensor - G107- , signal

2 - High Pressure Sensor - G65-

3 - Sunlight Photo Sensor 2 - G134- or Sunlight Photo Sensor - G107- , signal

5 - CAN High

6 - CAN Low

9 - + 5V for Sunlight Photo Sensor 2 - G134- or Sunlight Photo Sensor - G107-

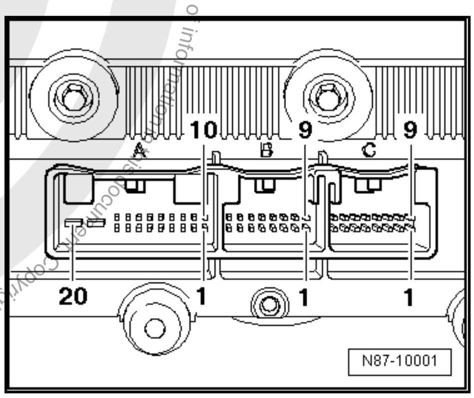
16 - Positive Connection (15a) in Vehicles with Auxiliary Heater

17 - Sensor Ground Signals

18 - A/C Compressor Regulator Valve - N280-

20 - Positive Connection (15a); in Vehicles with Auxiliary Heater Positive Connection (30a)

16-Pin Harness Connector, in Wiring Diagram T16g -B-



1 - + 5V for Adjustment Motors

2 - Left Temperature Control Door Position Sensor - G220-

3 - Right Temperature Control Door Potentiometer/Actuator - G221-

4 - Defroster Door Motor Position Sensor - G135-

5 - Central Door Motor Position Sensor - G112-

6 - Recirculation Door Motor Position Sensor - G143-

7 - Back Pressure Door Motor Position Sensor - G113-

8 - Left Footwell Vent Temperature Sensor - G261-

9 - Right Footwell Vent Temperature Sensor - G262-

10 - Fresh Air Intake Duct Temperature Sensor - G89-

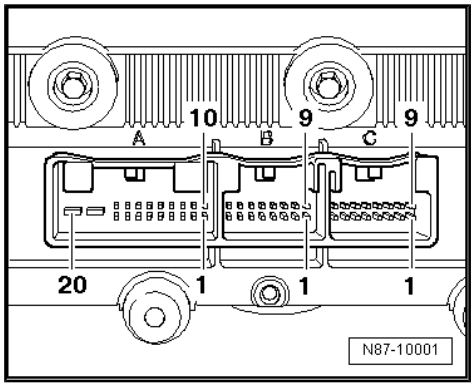
11 - Evaporator Temperature Sensor - G308-

14 - Potentiometer Signal Ground

15 - Left Vent Temperature Sensor - G150-

16 - Right Vent Temperature Sensor - G151-

16-Pin Harness Connector, in Wiring Diagram T16f -C-



1 - Left Temperature Control Door Motor - V158- , Cold

2 - Left Temperature Control Door Motor - V158- , Warm

3 - Defroster Door Motor - V107- , Closed

4 - Defroster Door Motor - V107- , Open

5 - Central Air Door Motor - V70- , Upper Body Vent

6 - Central Air Door Motor - V70- , Footwell

7 - Fresh/Recirculated Air Door Motor - V154- , Recirculating Air Mode Activation

8 - Fresh/Recirculated Air Door Motor - V154- , Fresh Air Mode Activation

9 - Airflow Door Motor - V71- , Open

10 - Airflow Door Motor - V71- , Closed

11 - Right Temperature Control Door Motor - V159- , Cold

12 - Right Temperature Control Door Motor - V159- , Warm

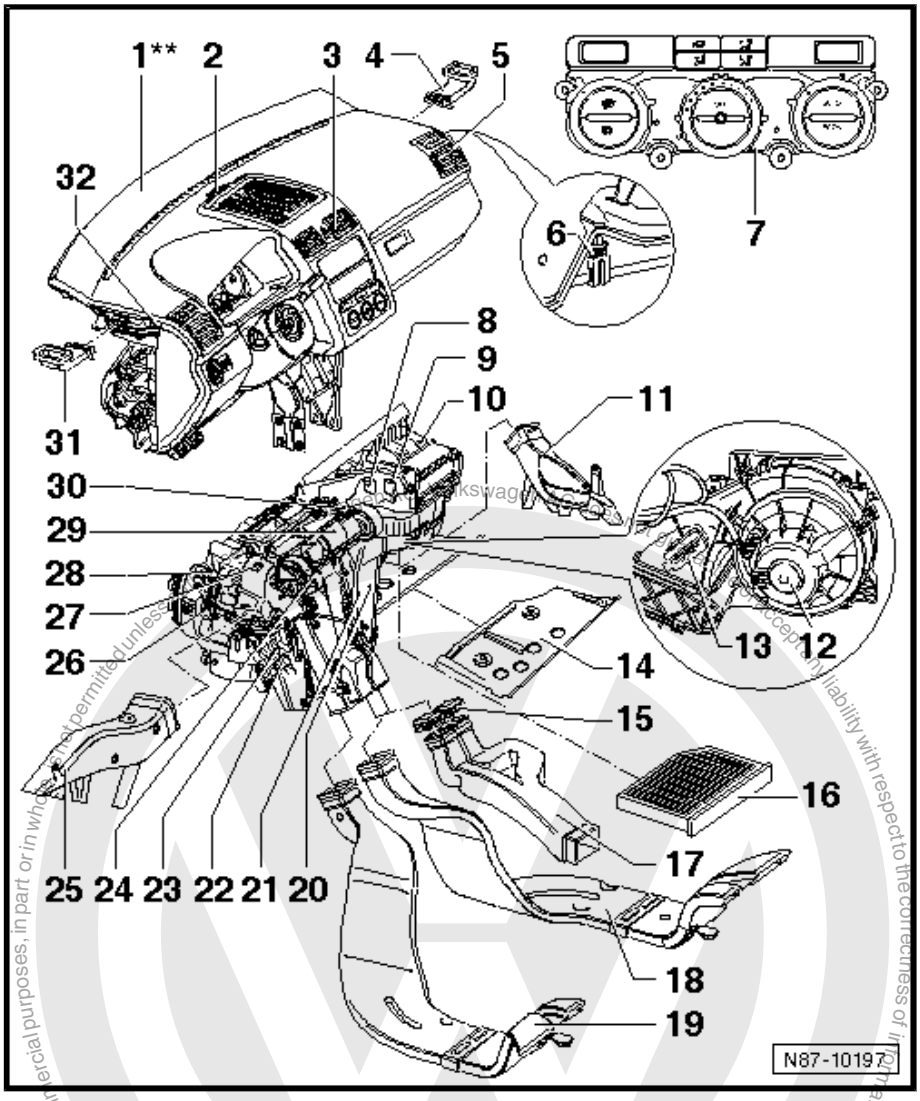
15 - Fresh Air Blower - V2- (PWM activation)

16 - Fresh Air Blower - V2- , Feedback Signal

4.6 Passenger Compartment Climatronic

Note

- *Disconnect the battery before removing any components marked with **. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery .*
- *A data plate indicates the refrigerant used and capacity.*



1 - Instrument Panel **

- ❑ Removing and installing. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .

2 - Sunlight Photo Sensor - G107- or Sunlight Photo Sensor 2 - G134-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Function: controls temperature door and fresh air blower depending on light intensity
- ❑ Emergency running in the event of failure: the Climatronic Control Module - J255- utilizes a fixed value.
- ❑ Removing and installing. Refer to ⇒ “4.17 Sunlight Photo Sensor G107 or Sunlight Photo Sensor 2 G134 , Removing”, page 72 .

3 - Center Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.1 Center Vents, Removing and Installing, Golf Wagon from MY 2007 and Jetta from MY 2005”, page 6 .

4 - Right Side Vent

5 - Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.3 Right or Left Vent, Removing and Installing”, page 7 .

6 - Right Vent Temperature Sensor - G151-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.16 Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 , Removing”, page 71 .

7 - Climatronic Control Module - J255-

- ❑ The Climatronic Control Module - J255- and the Front A/C Display Control Head - E87- are one component that cannot be disassembled.
- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.4 Front A/C Display Control Head E87 with Climatronic Control Module J255 , Removing and Installing”, page 56 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

8 - Airflow Door Motor - V71-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.22 Airflow Door Motor V71 or Fresh Air/Recirculating Air/Back Pressure Door Motor V425 , Removing and Installing”, page 73 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

9 - Fresh/Recirculated Air Door Motor - V154-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.21 Fresh/Recirculated Air Door Motor V154 , Removing and Installing”, page 73 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

10 - Fresh Air Intake Duct Temperature Sensor - G89-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Temperature sensor controls temperature door and fresh air blower depending on the temperature
- ❑ The instrument panel must be removed in order to remove and install the Fresh Air Intake Duct Temperature Sensor - G89- . Refer to ⇒ Rep. Gr. 70 .

11 - Right Footwell Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.5 Right Footwell Vent, Removing and Installing”, page 8 .

12 - Fresh Air Blower - V2- with Fresh Air Blower Control Module - J126-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

13 - Connector

14 - Heater Partition

- ❑ Removing. Refer to ⇒ Fig. ““Removing the Heater Partition”“ , page 4 .

15 - Closure Caps

- ❑ Only in vehicles without the air guide to the vent installed in the rear center console

16 - Dust and Pollen Filter

- ❑ With activated charcoal filter
- ❑ Removing and installing. Refer to ⇒ “1.4 Dust and Pollen Filter, Removing and Installing”, page 5 .

17 - Connection

- ❑ For center console air guide
- ❑ To remove, the center console must be removed. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Center Console .

18 - Right Footwell Rear Channel

- ❑ Removing and installing. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

19 - Left Footwell Rear Channel

- ❑ Removing and installing. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

20 - Evaporator Temperature Sensor - G308-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.15 Evaporator Temperature Sensor G308 , Removing and Installing”, page 71 .

21 - Right Temperature Control Door Motor - V159-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.25 Right Temperature Control Door Motor V159 , Removing and Installing”, page 77 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

22 - Auxiliary Heater Heating Element - Z35-

- ❑ Only installed on vehicles with a diesel engine without an auxiliary radiator.
- ❑ Removing and installing. Refer to ⇒ “1.12 Auxiliary Heater Heating Element Z35 , Removing and Installing, Vehicles through 1K-7M 119 726”, page 17 .

23 - Heater Core

- ❑ After replacing the heater core, replace all the coolant. Refer to ⇒ Rep. Gr. 19 .

- ❑ Heater Core, Removing and Installing. Refer to
  ⇒ “1.11 Heater Core, Removing and Installing”, page 14

24 - Central Air Door Motor - V70-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to
  ⇒ “4.26 Central Air Door Motor V70 , Removing and Installing”, page 78 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

25 - Left Footwell Vent

- ❑ Removing and installing. Refer to ⇒ “1.5.6 Left Footwell Vent, Removing and Installing”, page 8 .

26 - Left Temperature Control Door Motor - V158-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to
  ⇒ “4.24 Left Temperature Control Door Motor V158 , Removing and Installing”, page 76 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

27 - Left Footwell Vent Temperature Sensor - G261-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing. Refer to
  ⇒ “4.12 Left Footwell Vent Temperature Sensor G261 , Removing and Installing”, page 69 .

28 - Defroster Door Motor - V107-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to
  ⇒ “4.23 Defroster Door Motor V107 , Removing and Installing”, page 75 .
- ❑ Replacing: Initiate the basic setting using the Vehicle Diagnostic Tester . Refer to
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

29 - Heater and A/C Unit

- ❑ Removing and installing. Refer to
  ⇒ “4.8 Heater and A/C Unit, Removing and Installing, Climatronic”, page 62 .
- ❑ Disassembling and assembling. Refer to
  ⇒ “4.9 Heater and A/C Unit, Disassembling and Assembling”, page 66 .

30 - Right Footwell Vent Temperature Sensor - G262-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing. Refer to
  ⇒ “4.13 Right Footwell Vent Temperature Sensor G262 , Removing and Installing”, page 69 .

31 - Left Side Vent

32 - Left Vent Temperature Sensor - G150-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to
  ⇒ “4.16 Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 , Removing”, page 71 .

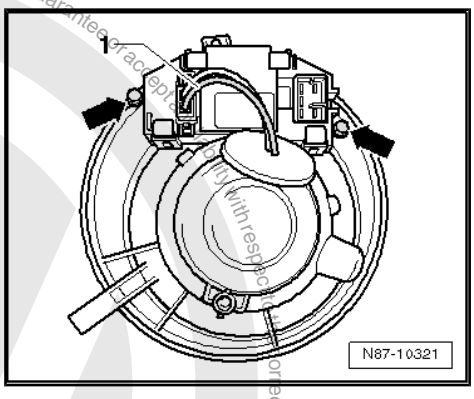
4.7 Fresh Air Blower Control Module - J126- , Removing and Installing

Removing

– Remove the Fresh Air Blower - V2- . Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

– Disconnect the connector -1- to the Fresh Air Blower - V2- .

– Remove the bolts -arrows-.



Installing

Install in reverse order of removal.

4.8 Heater and A/C Unit, Removing and Installing, Climatronic

Removing

Special tools and workshop equipment required

- Hose Clamps - Up To 40mm - 3093-
- For example, A/C Service Station - VAS6007A- (or succeeding model)
- Shop Crane - Drip Tray - VAS6208-

Note

To improve accessibility, additional components, for example, the engine cover, must be removed (depending on engine version). Refer to ⇒ Maintenance ; Booklet 20.1 ; Upper Engine Cover, Removing and Installing .

– Extract the refrigerant, using for example an -VAS6007A- . Only open the refrigerant circuit after doing this. See notes. Refer to ⇒ “1 Repairing Vehicles Equipped with A/C and Handling Refrigerants”, page 35 .

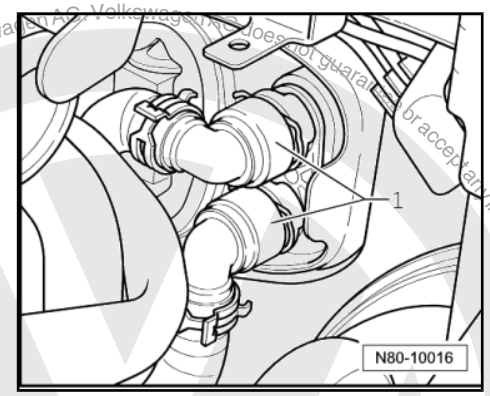
– Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .

– Remove the bulkhead in the plenum chamber. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Plenum Chamber Cover .

– Remove the rear channels from the right and left footwells. Refer to ⇒ “1.5.4 Right and Left Footwell Rear Channel, Removing and Installing”, page 7 .

– Place the -VAS6208- under the engine.

– Mark the coolant hoses -1-.



WARNING

The coolant system is under pressure when the engine is warm!

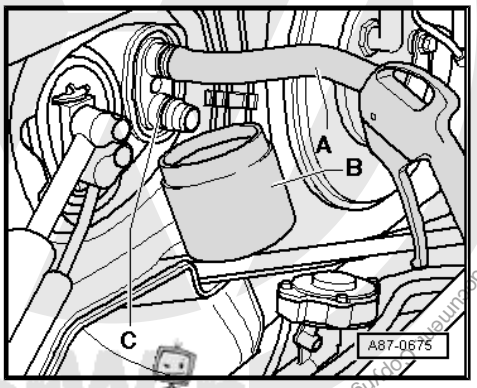
There is a risk of scalding from hot steam and coolant.

To reduce the pressure, cover the coolant reservoir cap with cloth and then open it carefully.

– Clamp the coolant hoses -1- using the -3093- and disconnect the coolant hoses from the heater core.

– Connect a section of hose -A- to the upper connection.

– Hold a container -B- under the lower connection -C-.



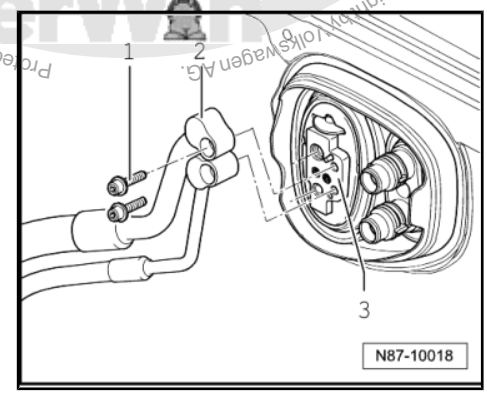
– Using a compressed air gun, carefully blow residual coolant out of heater core at heater core connection.

WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- *Evacuate the refrigerant and immediately open the refrigerant circuit afterward.*
- *If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.*



– From inside the engine compartment, remove the bolts -1- from the refrigerant pipes -2-.

– Remove the refrigerant lines from the expansion valve -3-.

Note

- *Seal open pipe connections.*
- *To seal off all open connections on expansion valve, sealing caps from a replacement expansion valve can be used.*

– Cover the carpet inside the passenger compartment with waterproof foil and water absorbing paper.

Note

When removing, record the bolt lengths and allocation for the reinstallation.

1 - Bolt

- ❑ 4 Nm

2 - Bolts

- ❑ 4 Nm
- ❑ Quantity: 2

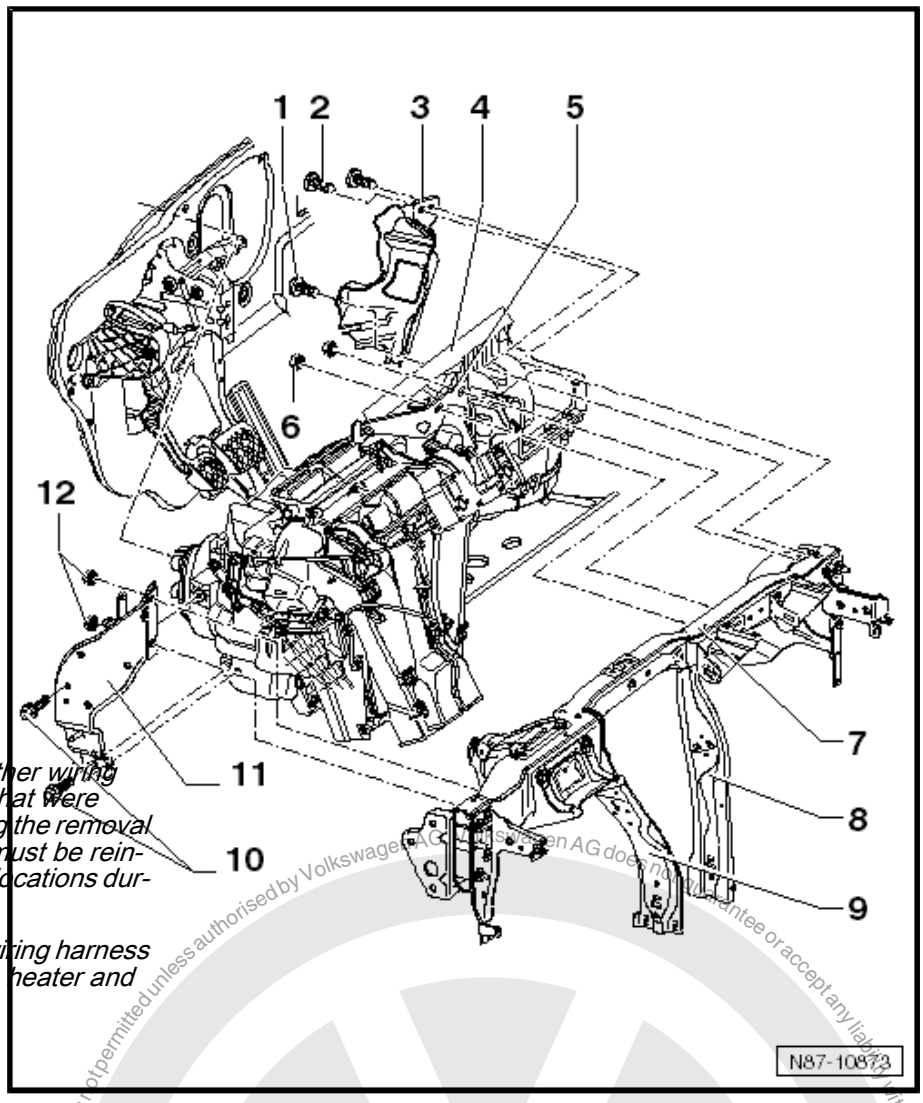
3 - Wiring Bracket

4 - Heater and A/C Unit

- ❑ Removing

– Remove the condensation water drain hose from the heater and A/C unit. Refer to ⇒ "4.19 Condensation Water Drain Hose on Heater and A/C Unit, Checking", page 72 .

– Disconnect the connectors from the heater and A/C unit.



Note

- ♦ *All cable ties and other wiring harness fasteners that were opened or cut during the removal of the A/C system must be reinstalled at the same locations during installation.*
- ♦ *The "A/C system" wiring harness is removed with the heater and A/C unit.*

– Remove the bolts -item 6- ⇒ Item 6 (page 65) from the bracket -item 5- ⇒ Item 5 (page 65) .

– Remove the support -item 8- ⇒ Item 8 (page 65) .

– Remove the bolts -item 10- ⇒ Item 10 (page 65) and nut -item 12- ⇒ Item 12 (page 65) and remove the bracket -item 11- ⇒ Item 11 (page 65) .

– Remove the bolts -item 2- ⇒ Item 2 (page 64) and - item 1- ⇒ Item 1 (page 64) from the cable bracket -item 3- ⇒ Item 3 (page 64) .

Note

- ♦ *To be able to reach the screw -item 1- ⇒ Item 1 (page 64) , the heater and A/C unit on driver side must be pulled out slightly from the bulkhead.*

- *When removing the heater, make sure that both coolant pipes from the heater core do not get caught and bent or damaged on plenum chamber or noise insulation pan.*
- *Pay attention to wiring harness, individual wiring connections may get damaged if pulled too forcefully.*

– Remove the heater and A/C unit.

Installing:

Install in reverse order of removal. Note the following:

– When installing, note installation position of seal for heater and A/C unit to engine compartment. Refer to ⇒ Fig. ""Seal for Heater and A/C Unit / Engine Compartment"" , page 65 .

– Make sure the condensation water drain hose is seated correctly. Refer to ⇒ "4.19 Condensation Water Drain Hose on Heater and A/C Unit, Checking", page 72 .

– Fill with coolant. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Coolant System/ Coolant .

5 - Bracket

6 - Bolts

- ❑ 8 Nm

7 - Subframe

8 - Right Support

9 - Left Support

10 - Bolts

- ❑ 8 Nm
- ❑ Quantity: 2

11 - Bracket

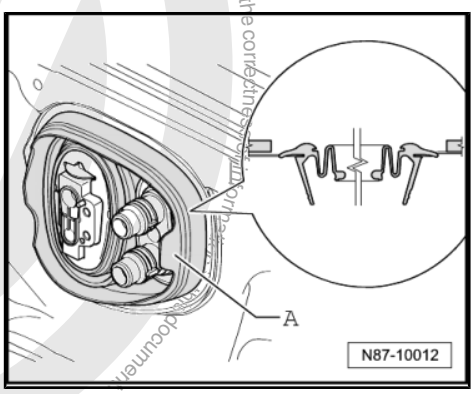
12 - Nut

- ❑ 8 Nm
- ❑ Quantity: 2

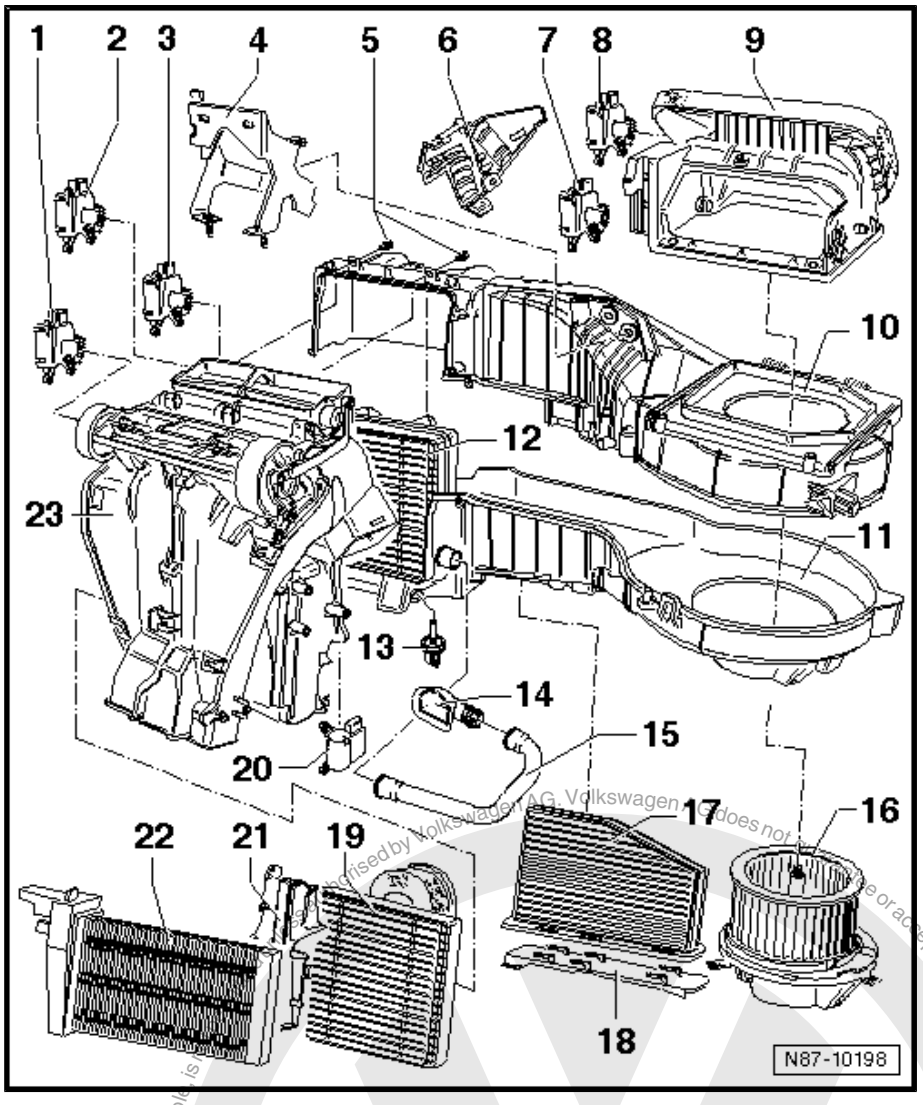
Seal for Heater and A/C Unit / Engine Compartment

Note

Note installation position of seal -A- during assembly.



4.9 Heater and A/C Unit, Disassembling and Assembling



1 - Central Air Door Motor - V70-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.26 Central Air Door Motor V70 , Removing and Installing”, page 78 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

2 - Left Temperature Control Door Motor - V158-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.24 Left Temperature Control Door Motor V158 , Removing and Installing”, page 76 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

3 - Defroster Door Motor - V107-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.23 Defroster Door Motor V107 , Removing and Installing”, page 75 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

4 - Bracket

5 - Bolts

- ❑ It is necessary to remove the bolts in order to separate the bracket from the air distribution and evaporator housing.

6 - Cover

7 - Fresh/Recirculated Air Door Motor - V154-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “4.21 Fresh/Recirculated Air Door Motor V154 , Removing and Installing”, page 73 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

8 - Airflow Door Motor - V71-

- ❑ Check using the Vehicle Diagnostic Tester

- ❑ Removing and installing. Refer to
  ⇒ “4.22 Airflow Door Motor V71 or Fresh Air/Recirculating Air/Back Pressure Door Motor V425 , Removing and Installing”, page 73 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

9 - Air Intake Housing

- ❑ With air recirculation door
- ❑ With back pressure door (Climatronic)

10 - Evaporator Housing Upper Section

- ❑ Evaporator Housing, Disassembling and Assembling. Refer to
  ⇒ “4.10 Evaporator Housing, Disassembling and Assembling”, page 68 .

11 - Evaporator Housing Lower Section

- ❑ Evaporator Housing, Disassembling and Assembling. Refer to
  ⇒ “4.10 Evaporator Housing, Disassembling and Assembling”, page 68 .

12 - Evaporator

- ❑ Removing and installing. Refer to ⇒ “6.11 Evaporator, Removing and Installing”, page 103 .

13 - Evaporator Temperature Sensor - G308-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to
  ⇒ “4.15 Evaporator Temperature Sensor G308 , Removing and Installing”, page 71 .

14 - Glove Compartment Cooling Connection

15 - Glove Compartment Cooling Coolant Hose

16 - Fresh Air Blower - V2- with Fresh Air Blower Series Resistor with Fuse - N24-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

17 - Dust and Pollen Filter

- ❑ With activated charcoal filter
- ❑ Removing and installing. Refer to ⇒ “1.2 Fresh Air Blower V2 , Removing”, page 4 .

18 - Cover

- ❑ For dust and pollen filter

19 - Heater Core

- ❑ After replacing the heater core, replace all the coolant. Refer to ⇒ Rep. Gr. 19 .
- ❑ Heater Core, Removing and Installing. Refer to
  ⇒ “1.11 Heater Core, Removing and Installing”, page 14

20 - Right Temperature Control Door Motor - V159-

- ❑ Check using the Vehicle Diagnostic Tester
- ❑ Removing and installing. Refer to
  ⇒ “4.25 Right Temperature Control Door Motor V159 , Removing and Installing”, page 77 .
- ❑ Replacing: initiate the basic setting using the Vehicle Diagnostic Tester . Refer to
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

21 - Heater Core Trim Panel

22 - Auxiliary Heater Heating Element - Z35-

- ❑ Only installed on vehicles with a diesel engine without an auxiliary radiator.
- ❑ Removing and installing. Refer to
  ⇒ “1.12 Auxiliary Heater Heating Element Z35 , Removing and Installing, Vehicles through 1K-7M 119 726”, page 17 .

23 - Air Distribution Housing

4.10 Evaporator Housing, Disassembling and Assembling

– Disconnect the evaporator housing from the heater and A/C unit. Refer to ⇒ “4.9 Heater and A/C Unit, Disassembling and Assembling”, page 66 .

– Disconnect the connectors from the heater and A/C unit.

1 - Evaporator Housing Lower Section

2 - Evaporator

- ❑ Check insulation, it must be completely present
- ❑ Removing and installing. Refer to ⇒ “6.11 Evaporator, Removing and Installing”, page 103 .

3 - Clamp

4 - Evaporator Housing Upper Section

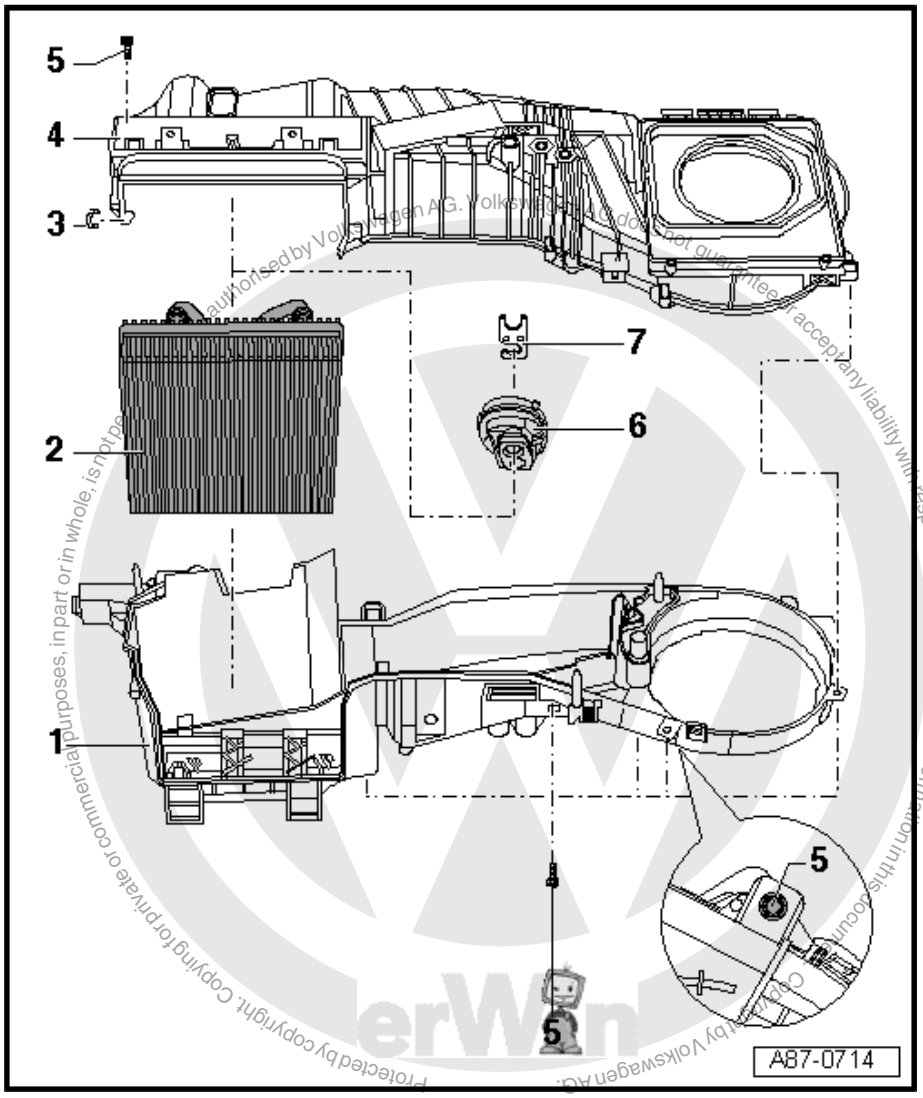
5 - Bolt

6 - Seal/Insulation

- ❑ Expansion valve heat insulation
- ❑ Removing and installing. Refer to ⇒ Fig. ““Seal for Heater and A/C Unit / Engine Compartment”“ , page 43 .

7 - Bracket

- ❑ Removing and installing. Refer to ⇒ “6.10 Expansion Valve, Removing and Functions”, page 101 .



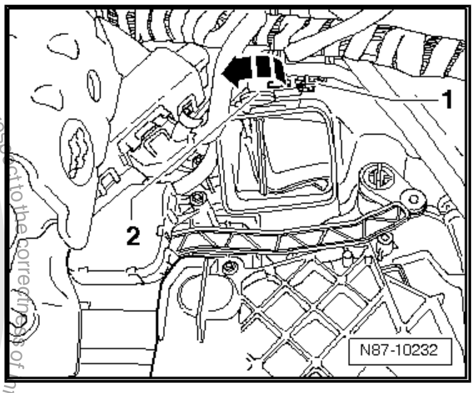
4.11 Left Footwell Vent Temperature Sensor - G261- , Removing and Installing

Removing

– Remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Airbag System .

– Remove the driver side footwell vent.

- Disconnect the connector on the Left Footwell Vent Temperature Sensor - G261- -1-.
- Turn the Left Footwell Vent Temperature Sensor - G261- -2- 90° in direction of -arrow- and remove it from the housing.



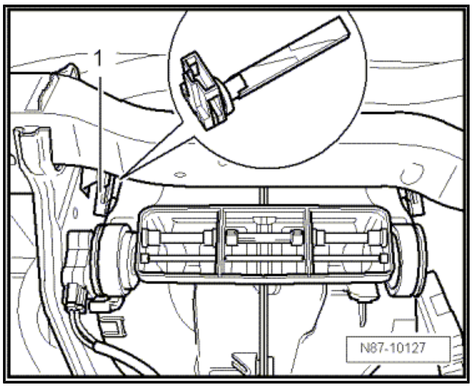
Installing

Install in reverse order of removal.

4.12 Left Footwell Vent Temperature Sensor - G261- , Removing and Installing

Removing

- Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .
- Remove the bolts -item 10- ⇒ Item 10 (page 65) from the bracket -item 11- ⇒ Item 11 (page 65) .
- Disconnect the connector on the Left Footwell Vent Temperature Sensor - G261- -1-.
- Push the bracket -item 11- ⇒ Item 11 (page 65) slightly to the left and then turn the Left Footwell Vent Temperature Sensor - G261- -1- 90° and remove it from the housing.



Installing

Install in reverse order of removal.

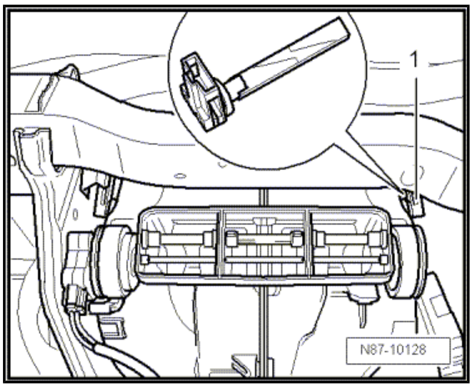
4.13 Right Footwell Vent Temperature Sensor - G262- , Removing and Installing

Removing

Note

The Right Footwell Vent Temperature Sensor - G262- is shown with instrument panel removed to provide a clearer illustration. It is not necessary to remove the instrument panel for installation.

- Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .
- Disconnect the connector on the Right Footwell Vent Temperature Sensor - G262- -1-.
- Turn the Right Footwell Vent Temperature Sensor - G262- -1- 90° and remove it from the housing.



Installing

4.14 Air Quality Sensor - G238- , Removing and Installing

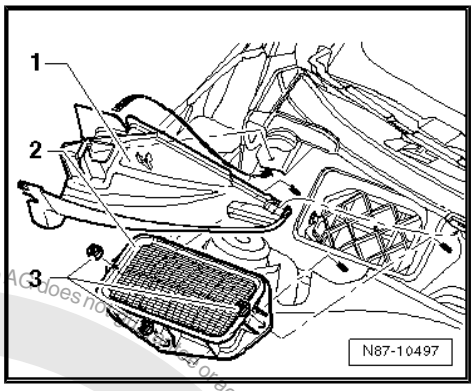
Note

- *The Air Quality Sensor - G238- is installed at the right front on the air intake grille in the plenum chamber.*
- *The Air Quality Sensor - G238- contains a highly sensitive electronic component that can be damaged if it comes in direct contact with solvents, fuels or chemicals.*
- *Do not install a sensor that has been kept, for example, in a tool box.*
- *Do not store removed sensors in areas where they can come into contact with solvents, fuels and certain chemical compositions (fluids or vapors).*

Removing

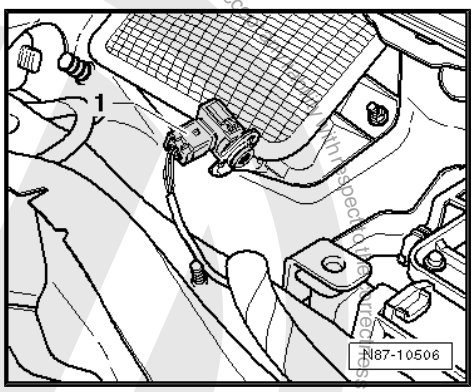
– Remove the plenum chamber cover. Refer to ⇒ Body Front; Rep. Gr. 50 ; Plenum Chamber Cover .

– Remove the cover over the air grille -1-.



– Disconnect the connector from the Air Quality Sensor - G238- .

– Release the Air Quality Sensor - G238- -1- and remove from the bracket on the air grille.



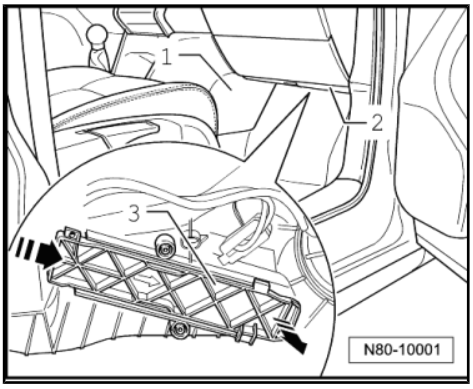
Installing

Install in reverse order of removal.

4.15 Evaporator Temperature Sensor - G308- , Removing and Installing

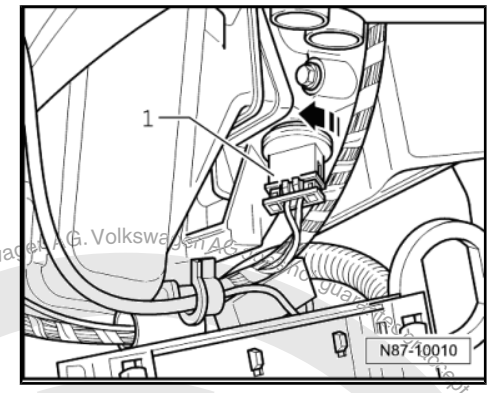
Removing

– Remove the cover -1- in the front passenger footwell.



– Disconnect the connector on the Evaporator Temperature Sensor - G308- -1-.

– Turn the Evaporator Temperature Sensor - G308- in the direction of -arrow- and remove it.



Installing

Install in reverse order of removal.

4.16 Left Vent Temperature Sensor - G150- and Right Vent Temperature Sensor - G151- , Removing

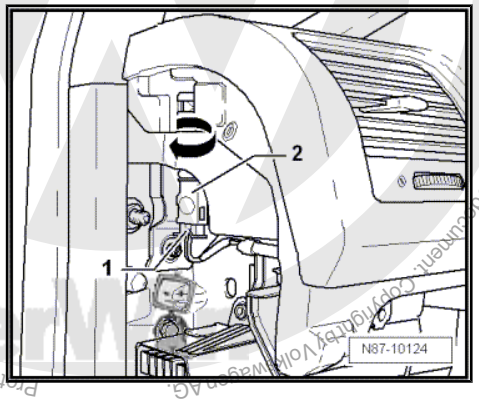
Note

Removal of sensors on both sides is identical, only the sides are reversed.

– Remove the cover on the right or left side of the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .

– Disconnect the connector -1- from the vent temperature sensor -2-.

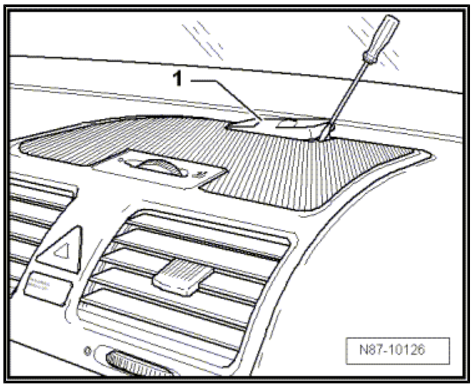
– Turn the vent temperature sensor -2- in direction of -arrow- 90° and remove it from the instrument panel.



4.17 Sunlight Photo Sensor - G107- or Sunlight Photo Sensor 2 - G134- , Removing

– Unclip sunlight photo sensor -1- from instrument panel using an appropriate tool.

– Disconnect the harness connector from sunlight photo sensor.

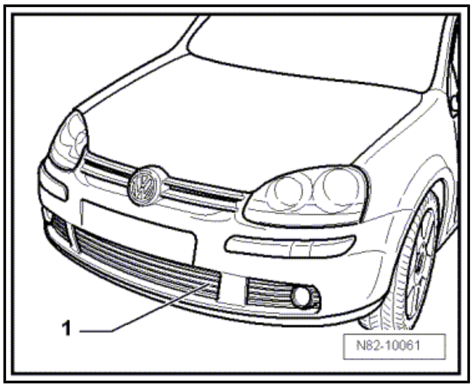


4.18 Outside Air Temperature Sensor - G17- , Removing and Installing

Removing

– Pull the center air grille out of the retainers on the front bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Removal and Installing

– Unclip the Outside Air Temperature Sensor - G17- -1- from the bracket and disconnect the connector.



Installing

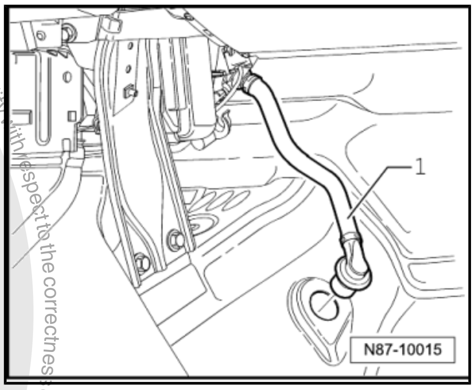
Install in reverse order of removal. Note the following.

Note

Ensure electrical connector is seated correctly (water entry).

4.19 Condensation Water Drain Hose on Heater and A/C Unit, Checking

– Remove the footwell cover from the front passenger side.



Note

♦ *The condensation water drain hose -1- must be able to be connected to the heater and a/c unit connection without pre-tension.*

♦ *The condensation water drain hose must sit securely on the heater and A/C unit connection condensation water drain.*

4.20 A/C System Control Actuators, Replacing

Perform following work first:

– Turn off all electrical equipment.

– Turn off the ignition.

– Remove the key.

4.21 Fresh/Recirculated Air Door Motor - V154- , Removing and Installing

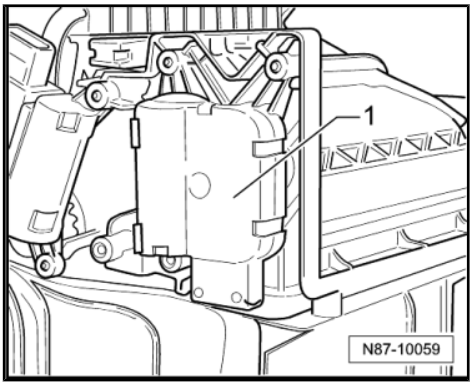
Removing

– Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .

– Remove the cover for the actuators.

– Disconnect the connector on the Fresh/Recirculated Air Door Motor - V154- -1-.

– Remove the Fresh/Recirculated Air Door Motor - V154- -1-.



Installing

Install in reverse order of removal.

Note

- *After installing, the recirculation door function must be checked.*
- *Initiate the "basic setting" using the Vehicle Diagnostic Tester . Refer to*
  ⇒ "4.2 Procedure for Checking and Adjusting Components", page 54 .

4.22 Airflow Door Motor - V71- or Fresh Air/ Recirculating Air/Back Pressure Door Motor - V425- , Removing and Installing

⇒ "4.22.1 Airflow Door Motor V71 or Fresh Air/Recirculating Air/ Back Pressure Door Motor V425 , Removing and Installing", page 73

⇒ "4.22.2 Airflow Door Motor V71 or Fresh Air/Recirculating Air/ Back Pressure Door Motor V425 , Removing and Installing, RHD", page 74

4.22.1 Airflow Door Motor - V71- or Fresh Air/ Recirculating Air/Back Pressure Door Motor - V425- , Removing and Installing

Special tools and workshop equipment required

- Vehicle Diagnostic Tester

Note

- *Position of air flow door must not be changed.*
- *Depending on the version, the Voltage Stabilizer - J532- must be removed. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Start/Stop System .*

Removing

– Turn off all electrical equipment.

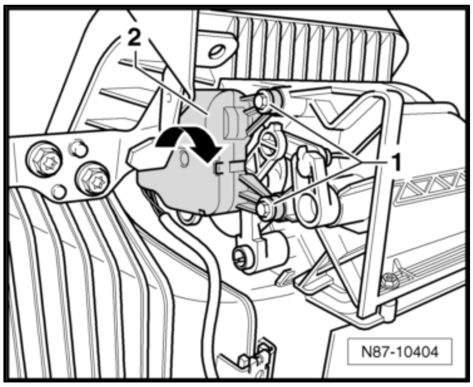
– Switch off the ignition.

– Remove the key.

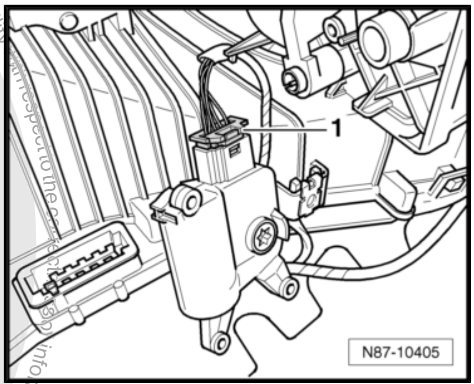
– Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .

– Remove the screws -1- (1.4 Nm).

– Turn the Airflow Door Motor - V71- and the Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- -2- approximately 15° in the direction of the -arrow- and then remove it from the air intake housing.



– Disconnect the connector -1- from the Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- .



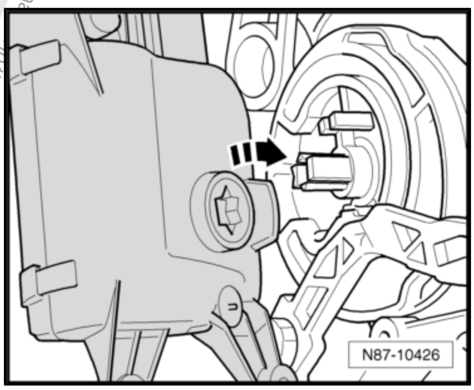
Note

Position of air flow door must not be changed.

Installing

Install in reverse order of removal. Note the following:

The Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- fits in only one position on the curved washer.



Note

- *Check the fresh air, recirculation and back pressure door functions after installing.*
- *Initiate the “basic setting” using the Vehicle Diagnostic Tester . Refer to*
  ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .

4.22.2 Airflow Door Motor - V71- or Fresh Air/ Recirculating Air/Back Pressure Door Motor - V425- , Removing and Installing, RHD

NOT FOR NORTH AMERICAN MARKET

Special tools and workshop equipment required

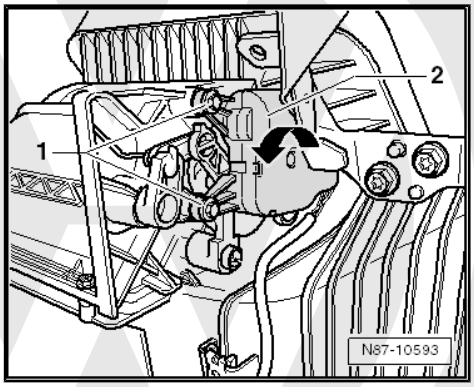
- Vehicle Diagnostic Tester

Removing

– Turn off all electrical equipment.

– Switch off the ignition.

– Remove the key.
– Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel; Instrument Panel, Removing and Installing .
– Remove the bolts -1- (1.4 Nm).
– Turn the Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- -2- approximately 15° in direction of the -arrow- and then pull it off of the air intake housing.
– Disconnect the connector from the Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- .



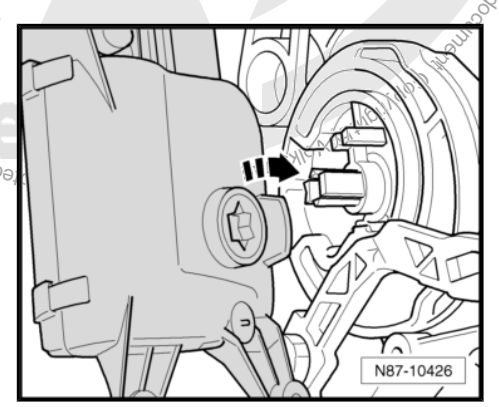
Note

Position of air flow door must not be changed.

Installing

Install in reverse order of removal. Note the following:

The Fresh Air/Recirculating Air/Back Pressure Door Motor - V425- fits in only one position on the curved washer.



Note

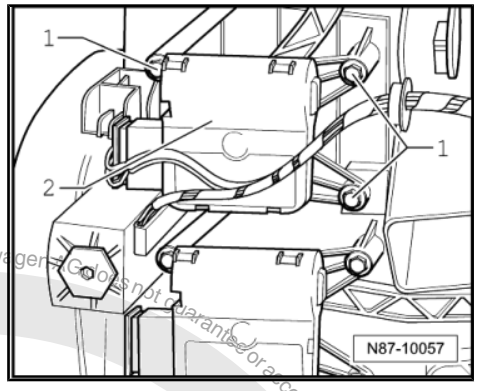
- *Check the fresh air, recirculation and back pressure door functions after installing.*
- *Initiate the "basic setting" using the Vehicle Diagnostic Tester . Refer to*
  ⇒ "4.2 Procedure for Checking and Adjusting Components", page 54 .

4.23 Defroster Door Motor - V107- , Removing and Installing

Removing

– Remove the driver side storage compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .
– Remove the left footwell vent. Refer to
  ⇒ "1.5.6 Left Footwell Vent, Removing and Installing", page 8 .

– Remove the bracket -Item 11- ⇒ Item 11 (page 65) .
– Disconnect the connector on the Defroster Door Motor - V107- -2-.
– Remove the bolts -1-, remove the Defroster Door Motor - V107- -2- and unhook the brace.



Installing

Install in reverse order of removal.

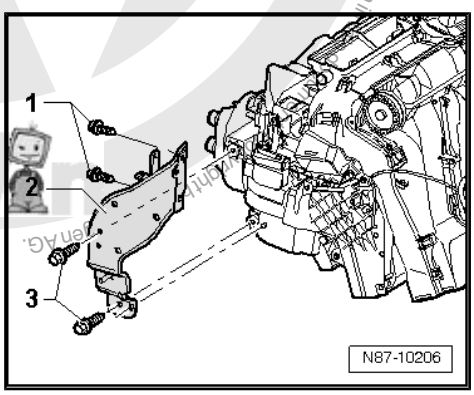
Note

- *After installing, the function of the defroster door must be checked.*
- *Initiate the "basic setting" using the Vehicle Diagnostic Tester . Refer to ⇒ "4.2 Procedure for Checking and Adjusting Components", page 54 .*

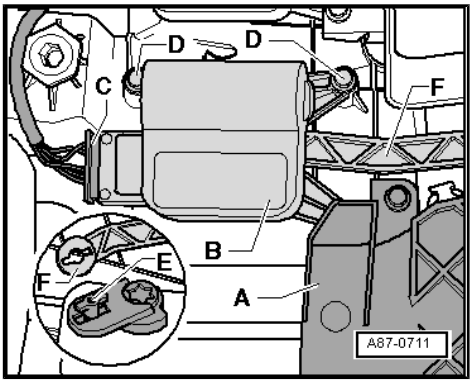
4.24 Left Temperature Control Door Motor - V158- , Removing and Installing

Removing

– Remove the left footwell vent. Refer to ⇒ "1.5.6 Left Footwell Vent, Removing and Installing", page 8 .
– Remove the left footwell center console trim panel.
– Remove the Data Bus On Board Diagnostic Interface - J533- . Refer to ⇒ Electrical Equipment; Rep. Gr. 97 ; Control Modules .
– Remove the bolts -3- (9 ± 1.3 Nm).
– Remove the bolts and nuts -1-.
– Remove the bracket -2-.



– Mark the connector -C- for the motor (danger of confusing it with other connectors that may look the same).
– Disconnect the connector -C- on the Left Temperature Control Door Motor - V158- .
– Remove the cover -A-.
– Remove the screws -D- 1.4 Nm and the Left Temperature Control Door Motor - V158- -B-.
– Disconnect the lever -E- from the connecting rod -F-.



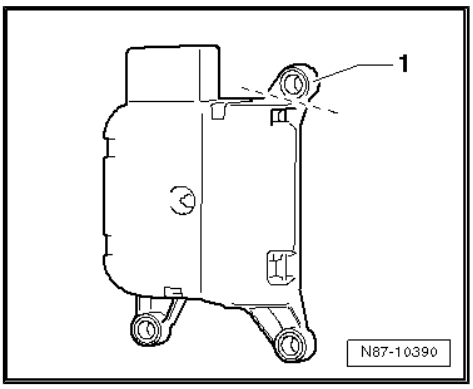
Installing

Note

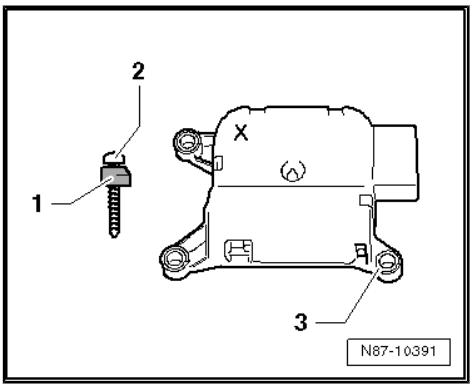
Optimal adjustment motors are marked with an "X".

For easier assembly, use a Raised Head Screw - N 103 254 01- that has been shortened to approximately 2 mm.

– Remove the mount from the old Left Temperature Control Door Motor - V158- using a diagonal cutter -1-, for example.



– Attach the new Left Temperature Control Door Motor - V158- that is marked with an "X" to the mount -3- on the blower case using the shortened raised head screw -2- and the removed mount -1-.



Note

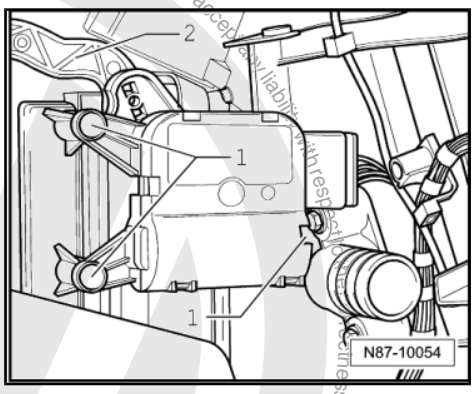
- *After installing, the function of the left temperature door must be checked.*
- *Initiate the "basic setting" using the Vehicle Diagnostic Tester . Refer to* *⇒ "4.2 Procedure for Checking and Adjusting Components", page 54* .

4.25 Right Temperature Control Door Motor - V159- , Removing and Installing

Removing

– Remove the glove compartment. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers .

– Remove the right footwell vent. Refer to ⇒ “1.5.5 Right Footwell Vent, Removing and Installing”, page 8 .
– Disconnect the connector on the Right Temperature Control Door Motor - V159- .
– Remove the screws -1- and the Right Temperature Control Door Motor - V159- .
– Unhook the brace -2- from the Right Temperature Control Door Motor - V159- .



Installing

Install in reverse order of removal.

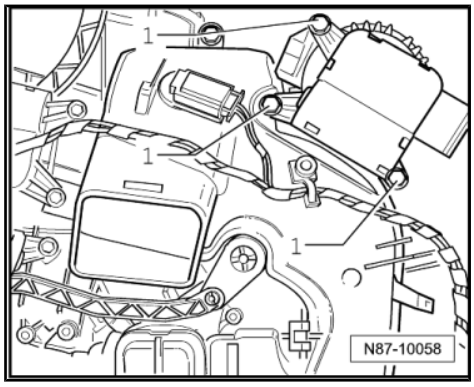
Note

- *After installing, the function of the right temperature door must be checked.*
- *Initiate the “basic setting” using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .*

4.26 Central Air Door Motor - V70- , Removing and Installing

Removing

– Remove the instrument panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Instrument Panel .
– Disconnect the connector on the Central Air Door Motor - V70- .
– Remove the bolts -1- and the Central Air Door Motor - V70- .



Installing

Install in reverse order of removal.

Note

- *After installing, the function of the central air door must be checked.*
- *Initiate the “basic setting” using the Vehicle Diagnostic Tester . Refer to ⇒ “4.2 Procedure for Checking and Adjusting Components”, page 54 .*

5 A/C Compressor Sub-Assembly Bracket

⇒ "5.1 A/C Compressor Sub-Assembly Bracket, Removing and Installing, Engine Codes BRM and BXE", page 79

⇒ "5.2 A/C Compressor Sub-Assembly Bracket, Removing and Installing, Engine Codes BGP and BGQ", page 81

⇒ "5.3 A/C Compressor Sub-Assembly Bracket, Removing and Installing, Engine Codes BPY, BWA, BSE, BSF, BLR and BLY", page 83

5.1 A/C Compressor Sub-Assembly Bracket, Removing and Installing, Engine Codes BRM and BXE

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-

Note

- *The A/C compressor sub-assembly bracket can be removed and installed without opening the refrigerant circuit.*
- *To remove the ribbed belt. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .*

1 - M10 x 65 Bolt

- ❑ 50 Nm

2 - M10 x 45 Hex Bolt

- ❑ 50 Nm

3 - M10 x 45 Hex Bolt

- ❑ 50 Nm

4 - M10 x 45 Hex Bolt

- ❑ 50 Nm

5 - M10 x 65 Bolt

- ❑ 50 Nm

6 - M10 x 65 Bolt

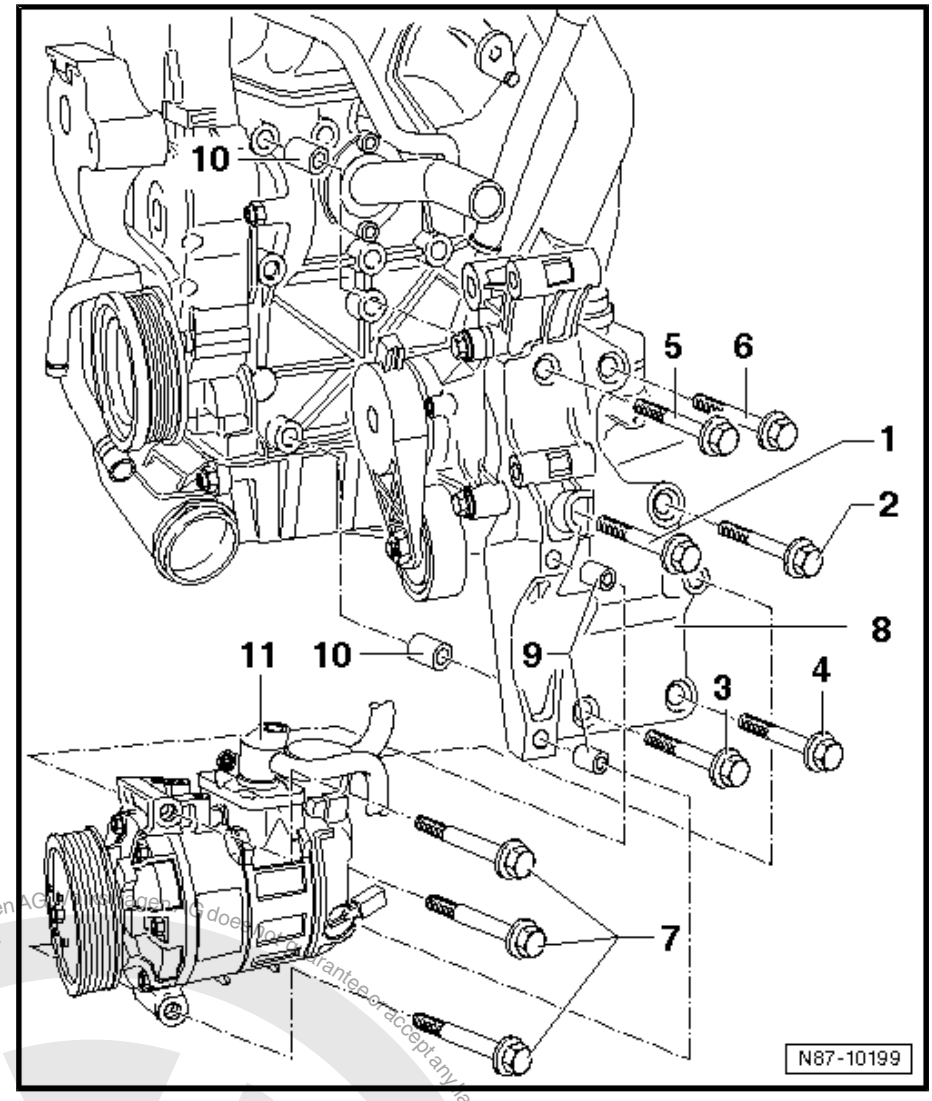
- ❑ 50 Nm

7 - M8 x 100 Bolts

- ❑ 25 Nm
- ❑ Quantity: 3

8 - Generator and A/C Compressor Sub-Assembly Bracket

- ♦ Number on the Sub-Assembly Bracket - 03G 903 143 A-



Removing

– Remove the generator. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Generator; Generator, Removing and Installing.
– Loosen the A/C compressor and remove the hex bolts -7-. Remove A/C compressor from the sub-assembly bracket and secure it to the body using a suitable material (a welding wire for example). Refer to ⇒ Fig. ""Securing A/C the Compressor to the Body"" , page 81 .
– Remove the bolts -1 to 6- and remove the sub-assembly bracket from cylinder block.

♦ Always observe tightening sequence of the bolts:

– Tighten the bolts in positions -1, 2, 3, 4, 5 and 6- one after the other.

9 - Alignment Sleeves

- ❑ Make sure they are seated correctly between the sub-assembly bracket and the A/C compressor.
- ❑ Quantity: 2

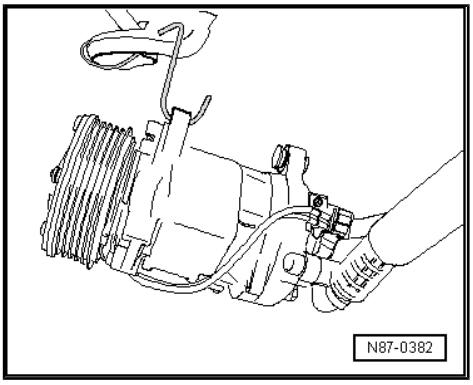
10 - Alignment Sleeves

- ❑ Make sure they are seated correctly between the sub-assembly bracket and the cylinder block.
- ❑ Quantity: 2

11 - A/C Compressor

- ❑ Removing and installing. Refer to ⇒ "6.7 A/C Compressor", page 93 .

Securing A/C the Compressor to the Body



Ribbed Belt Routing:

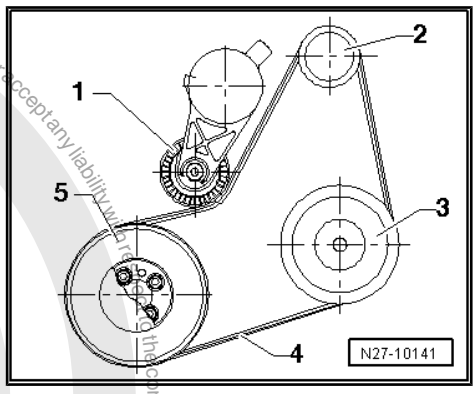
1 - Tensioning Roller

2 - Ribbed Belt Pulley - Generator

3 - Ribbed Belt Pulley - A/C Compressor

4 - Ribbed Belt

5 - Ribbed Belt Pulley - Crankshaft



If A/C compressor is removed and refrigerant circuit not opened, A/C compressor must be secure to body using appropriate material, a welding wire for example.

Ensure that the refrigerant hoses remain on A/C compressor without tension for this.

Note

- *When installing the belt ensure it is correctly seated in the ribbed belt pulley.*
- *Install ribbed belt over the A/C compressor ribbed belt pulley last.*

5.2 A/C Compressor Sub-Assembly Bracket, Removing and Installing, Engine Codes BGP and BGQ

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-

Note

- *The A/C compressor sub-assembly bracket can be removed and installed without opening the refrigerant circuit.*
- *To remove the ribbed belt. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .*

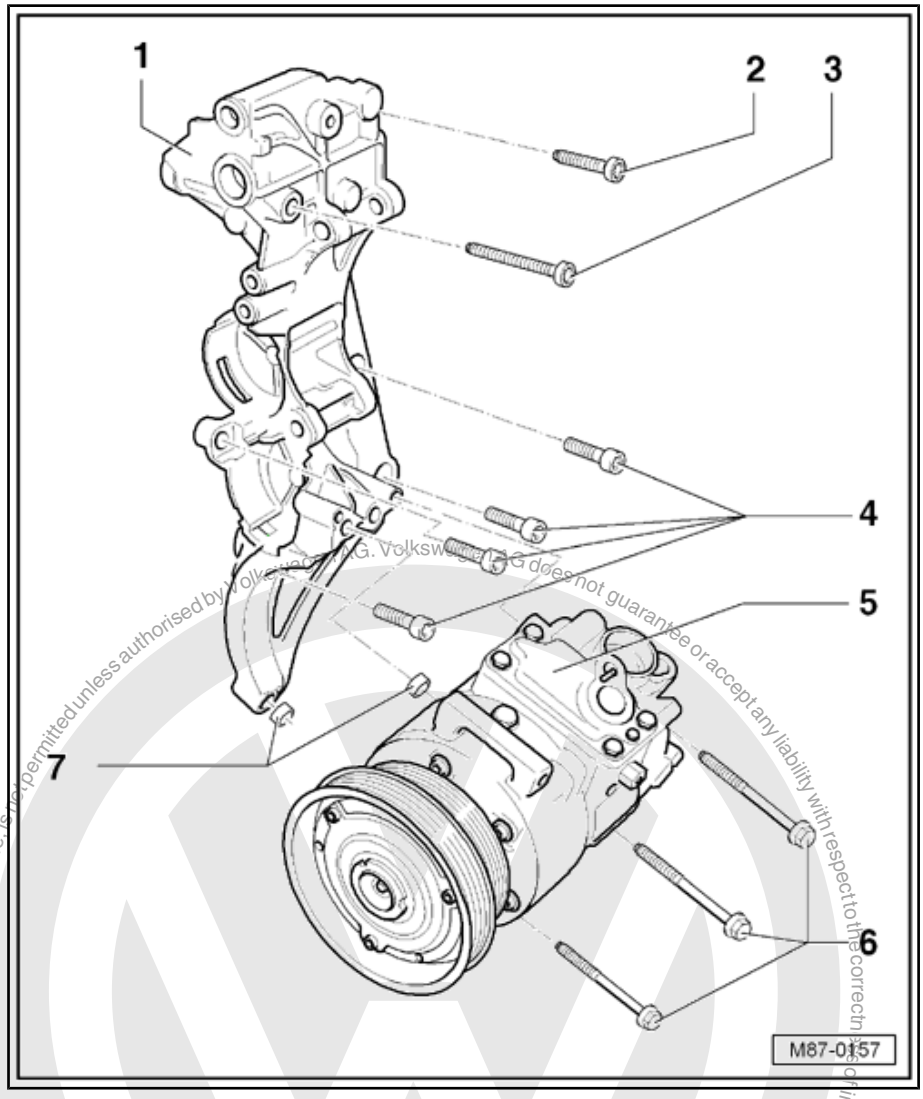
1 - Generator and A/C Compressor Sub-Assembly Bracket

- Number on the Sub-Assembly Bracket - 07K 903 143 B-

Removing

– Loosen the A/C compressor and remove the hex bolts -6-. Remove A/C compressor from the sub-assembly bracket and secure it to the body using a suitable material (a welding wire for example). Refer to ⇒ Fig. ""Securing A/C the Compressor to the Body"" , page 83 .

– Remove the bolts -2, 3 and 4- and remove the sub-assembly bracket -1- from the cylinder block.



2 - M8 x 60 Internal Multi-Point Bolt

❑ 25 Nm

3 - M8 x 110 Internal Multi-Point Bolt

❑ 25 Nm

4 - M8 x 30 Hex Socket Bolts

❑ 25 Nm

❑ Quantity: 4

5 - A/C Compressor

❑ Removing and installing. Refer to ⇒ "6.7 A/C Compressor", page 93 .

6 - Hex Bolts M8x85

❑ 25 Nm

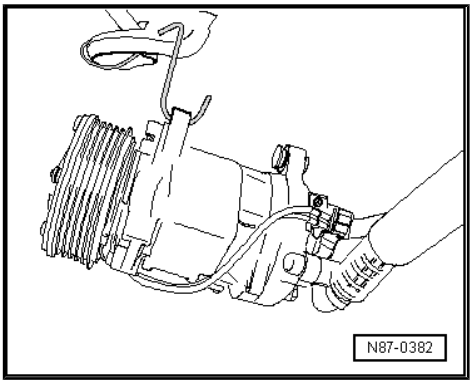
❑ Quantity: 3

7 - Alignment Sleeves

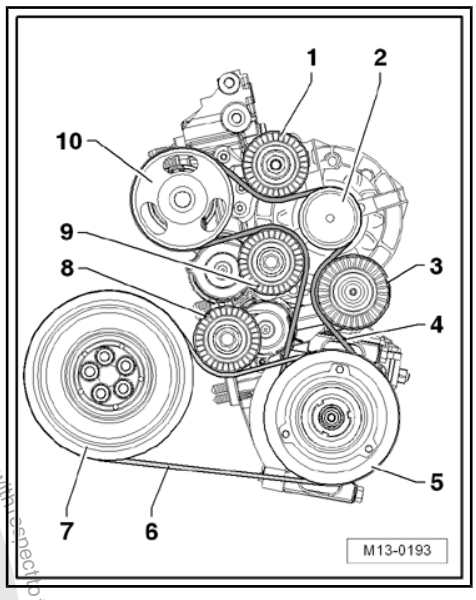
❑ Quantity: 2

❑ Make sure they are seated correctly between the sub-assembly bracket and the A/C compressor.

Securing A/C the Compressor to the Body



Ribbed Belt Routing



1 - Idler Roller, Top
2 - Belt Pulley - Generator
3 - Idler Roller, Bottom
4 - Ribbed Belt for the Generator and Coolant Pump
5 - Belt Pulley - A/C Compressor
6 - Ribbed Belt for A/C Compressor
7 - Crankshaft Belt Pulley
8 - A/C Compressor Ribbed Belt Tensioning Roller
9 - Ribbed Belt Tensioning Roller for the Generator and Coolant Pump
10 - Coolant Pump Belt Pulley

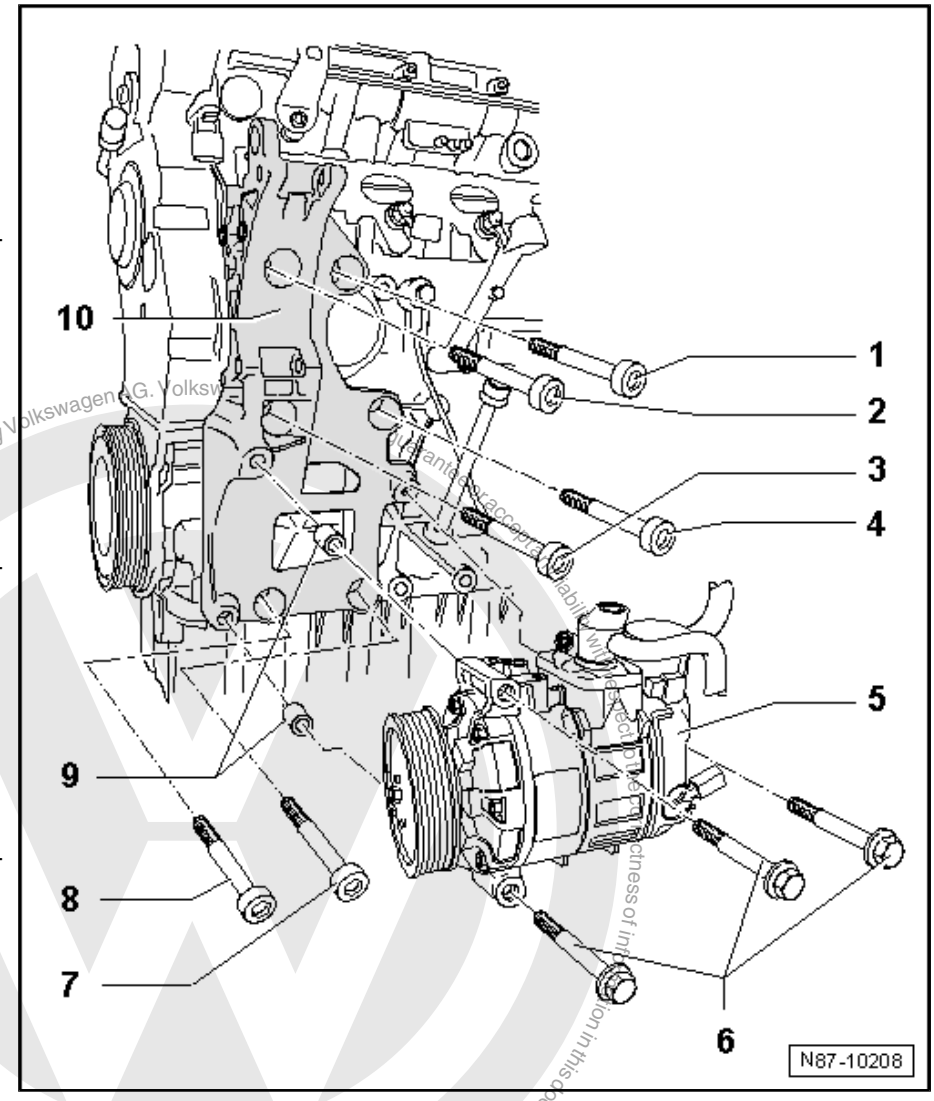
5.3 A/C Compressor Sub-Assembly Bracket, Removing and Installing, Engine Codes BPY, BWA, BSE, BSF, BLR and BLY

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-

Note

- *The A/C compressor sub-assembly bracket can be removed and installed without opening the refrigerant circuit.*
- *To remove the ribbed belt. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 13 .*



1 - M10 x 45 Cylinder Collar Bolt

- 1.6L fuel injection engine and 2.0L FSI engine: 52 Nm
- 2.0L turbo FSI engine: 40 Nm
- There are different tightening specifications:
- Alignment Hole

2 - M10 x 45 Cylinder Collar Bolt

- 1.6L fuel injection engine and 2.0L FSI engine: 52 Nm
- 2.0L turbo FSI engine: 40 Nm
- There are different tightening specifications:

3 - M10 x 45 Cylinder Collar Bolt

- 1.6L fuel injection engine and 2.0L FSI engine: 52 Nm
- 2.0L turbo FSI engine: 40 Nm
- There are different tightening specifications:

4 - M10 x 45 Cylinder Collar Bolt

- 1.6L fuel injection engine and 2.0L FSI engine: 52 Nm
- 2.0L turbo FSI engine: 40 Nm
- There are different tightening specifications:

5 - A/C Compressor

- Removing and installing. Refer to ⇒ “6.7 A/C Compressor”, page 93 .

6 - M8 x 100 Bolts

- 25 Nm
- Quantity: 3

7 - M10 x 45 Cylinder Collar Bolt

- 1.6L fuel injection engine and 2.0L FSI engine: 52 Nm
- 2.0L turbo FSI engine: 40 Nm
- There are different tightening specifications:
- Alignment Hole

8 - M10 x 45 Cylinder Collar Bolt

- 1.6L fuel injection engine and 2.0L FSI engine: 52 Nm
- 2.0L turbo FSI engine: 40 Nm
- There are different tightening specifications:

9 - Alignment Sleeves

- Quantity: 2
- Make sure they are seated correctly between the sub-assembly bracket and the A/C compressor.

10 - A/C Compressor Sub-Assembly Bracket

Number on the Sub-Assembly Bracket - 06F 903 143 E/F-

Removing

- Remove the generator. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Generator .
- Loosen the A/C compressor and remove the hex bolts -6-. Remove A/C compressor from the sub-assembly bracket and secure it to the body using a suitable material (a welding wire for example). Refer to ⇒ Fig. ""Securing A/C the Compressor to the Body"" , page 85 .
- Remove the bolts -1 through 4, 7 and 8- and remove the sub-assembly bracket -10- from the cylinder block.

Installing

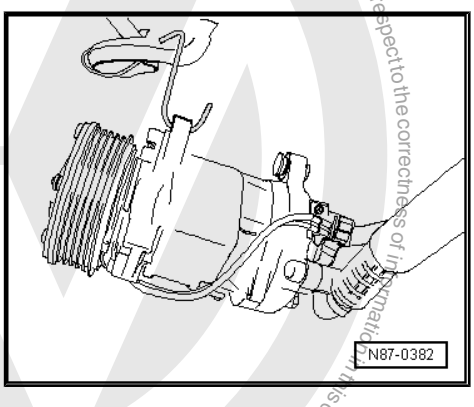
♦ Always observe tightening sequence of the bolts:

- Tighten cylinder collar bolt -1- (fitting hole), -7- (fitting hole), -4, 8, 3 and 2- in succession.

Securing A/C the Compressor to the Body

If A/C compressor is removed and refrigerant circuit not opened, A/C compressor must be secure to body using appropriate material, a welding wire for example.

Ensure that the refrigerant hoses remain on A/C compressor without tension for this.



Note

♦ *When installing the belt ensure it is correctly seated in the ribbed belt pulley.*

♦ *Install ribbed belt over the A/C compressor ribbed belt pulley last.*

6 Refrigerant Circuit Service Work, Performed Only by Specially Trained Personnel in Suitable Workshops

6.1 General Information

Note

- *Information for repairing vehicles with A/C and handling refrigerant can be found in ELSA under ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 ; Repairing Vehicles Equipped with A/C and Handling Refrigerants*
- *Information for special tools and testing equipment when repairing vehicles with A/C can be found in ELSA. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 ; Special Tools*

WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Evacuate the refrigerant and immediately open the refrigerant circuit afterward.***
- ***If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

Note

- *Flush the refrigerant circuit with refrigerant R134a under the following conditions:*
- *In the event of dirt or other contamination in the refrigerant circuit.*
- *If vacuum reading is not maintained on evacuating a leak-free refrigerant circuit (pressure build-up due to moisture in refrigerant circuit).*
- *The refrigerant circuit has been left open for longer than normal (for example, after a collision).*
- *If pressure and temperature measurements in the refrigerant circuit indicate the likelihood of moisture in the refrigerant circuit.*
- *It is not clear how much refrigerant oil is in the refrigerant circuit.*
- *A/C compressor had to be replaced due to internal damage (for example, noise or no output).*

6.2 Tools and Testing Equipment

Information for special tools and testing equipment when repairing vehicles with A/C can be found in ELSA. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Special Tools

Special tools and workshop equipment required

- Torque Wrench 1783 - 2-10Nm - VAG1783-
- For example, A/C Service Station - VAS6007A- (or succeeding model)
- Torque Wrench 1783 - 1/4" Drive Ratchet - VAS6234-
- Refrigerant Sockets - T10364-

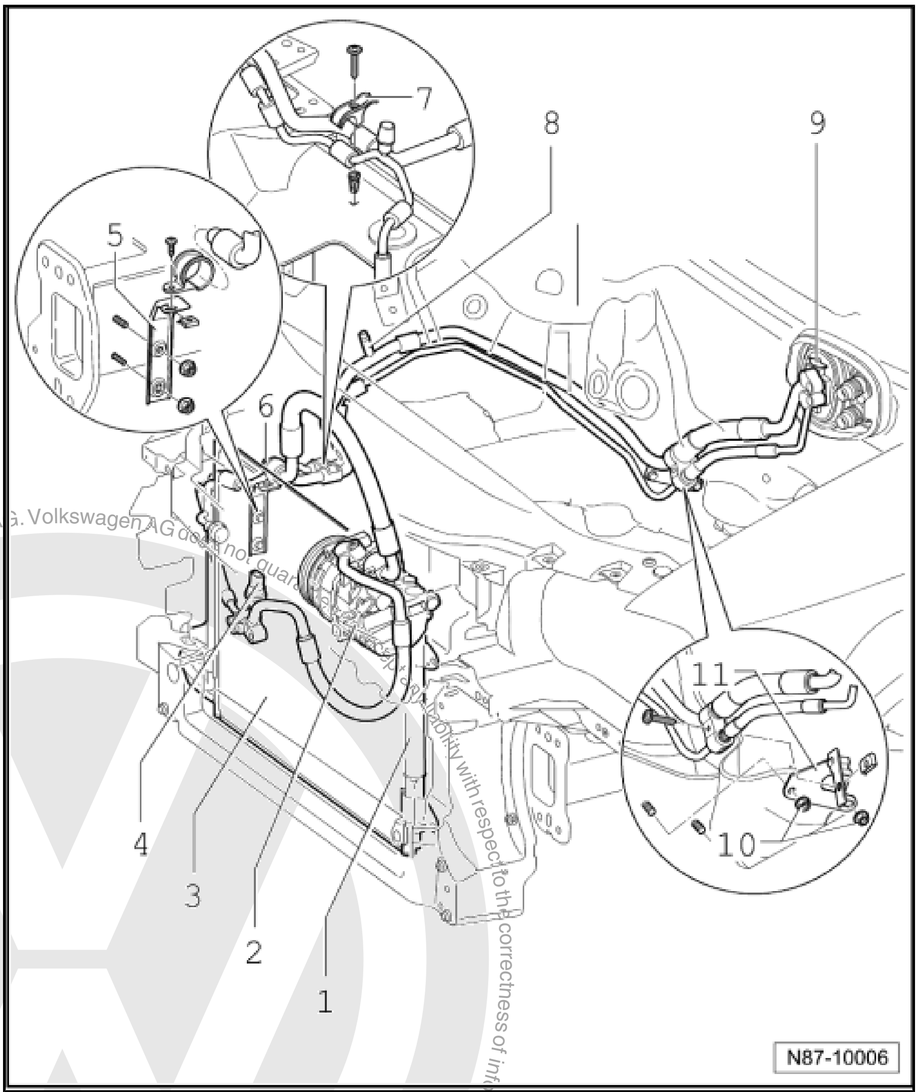
6.3 Refrigerant Circuit Components, Replacing

WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Evacuate the refrigerant and immediately open the refrigerant circuit afterward.***
- ***If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***



1 - Reservoir with Dryer Cartridge

- ❑ Removing and installing. Refer to ⇒ “6.5 Receiver/Dryer with Dryer Cartridge, Removing and Installing, Showa (FUJIKOKI)”, page 90 .

2 - A/C Compressor

- ❑ Pay attention to the information regarding installing the A/C compressor. Refer to ⇒ “6.13 A/C Compressor, Installation Notes”, page 106 .
- ❑ Removing and installing. Refer to ⇒ “6.7 A/C Compressor”, page 93 .

3 - Condenser

- ❑ Removing and installing. Refer to ⇒ “6.12 Condenser, Removing and Installing”, page 104 .

4 - High Pressure Sensor -G65-

- ❑ Removing. Refer to ⇒ “6.4 High Pressure Sensor G65 , Removing and Installing ”, page 89 .

5 - Bracket

6 - Evacuating and Charging Valve

- ❑ High pressure side
- ❑ Environmentally hazardous draining of refrigerant is an offense punishable by law.
- ❑ Capacities. Refer to ⇒ Fluid Capacity Tables; Rep. Gr. 03 .

7 - Retaining Bracket

8 - Evacuating and Charging Valve

- ❑ Low pressure side
- ❑ Environmentally hazardous draining of refrigerant is an offense punishable by law.
- ❑ Capacities. Refer to ⇒ Fluid Capacity Tables; Rep. Gr. 03 .

9 - Expansion Valve

- ❑ Function and removal. Refer to ⇒ “6.10 Expansion Valve, Removing and Functions”, page 101 .

10 - Hex Nut

- ❑ 20 Nm

11 - Bracket

6.4 High Pressure Sensor - G65- , Removing and Installing

⇒ "6.4.1 High Pressure Sensor G65 , Removing and Installing, Gasoline Engine", page 89

⇒ "6.4.2 High Pressure Sensor G65 , Removing and Installing, Common Rail Diesel", page 89

6.4.1 High Pressure Sensor - G65- , Removing and Installing, Gasoline Engine

Special tools and workshop equipment required

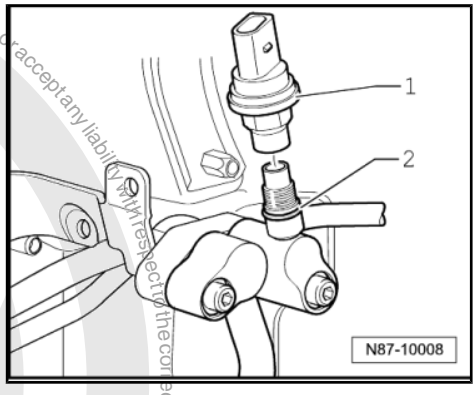
- Torque Wrench 1331 5-50Nm - VAG1331-
- Torque Wrench 1331 Insert - Open Jaw - 17mm - VAG1331/6-

Removing

– Remove the noise insulation from the engine. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Noise Insulation .

– Disconnect the connector from the high pressure sensor -1-.

– Remove the High Pressure Sensor - G65- -1- from the refrigerant line connection.



Installing

Note

- *Replace the O-ring -2-.*
- *The High Pressure Sensor - G65- -1- may be installed in a different location near the condenser depending on the engine version.*

High Pressure Sensor - G65- tightening specification: 8 ± 1 Nm.

6.4.2 High Pressure Sensor - G65- , Removing and Installing, Common Rail Diesel

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-
- Diesel Engine Tool Set - 17mm - T10395-

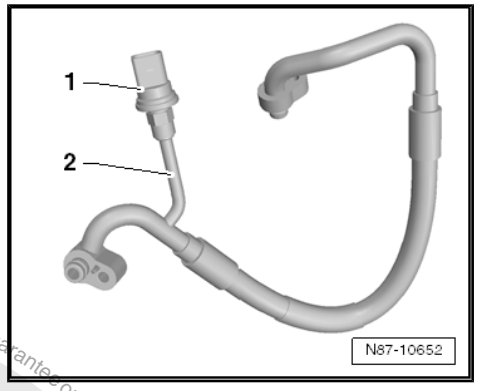
Removing

– Disconnect the connector from the high pressure sensor.

Note

If refrigerant drips out of the refrigerant line for longer than one second when loosening the High Pressure Sensor - G65- , then tighten the High Pressure Sensor - G65- again and extract the refrigerant. The check valve inside the refrigerant pipe is faulty and must be replaced.

– Remove the High Pressure Sensor - G65- -1- from the refrigerant line connection -2-.



Installing

Install in reverse order of removal. Note the following:

– Replace the O-ring.

High Pressure Sensor - G65- tightening specification: 8 ± 1 Nm.

6.5 Receiver/Dryer with Dryer Cartridge, Removing and Installing, Showa (FUJI-KOKI)

Special tools and workshop equipment required

◆ A/C Service Station - VAS6007A-

Removing

Note

Observe the notes. Refer to
⇒ "6.3 Refrigerant Circuit Components, Replacing", page 87 .

– Extract the refrigerant, using for example the -VAS6007A- , only then open the refrigerant circuit. See notes. Refer to ⇒ "6.3 Refrigerant Circuit Components, Replacing", page 87 .

– Remove the front bumper. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Front Bumper Cover .

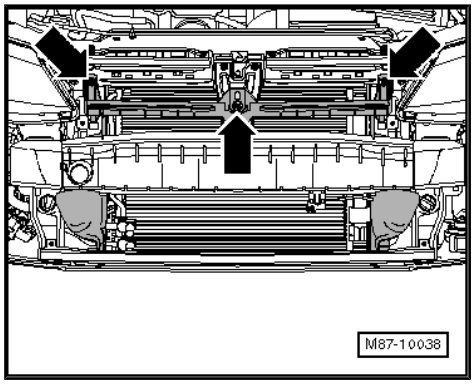
WARNING

Danger due to refrigerant coming out under pressure.

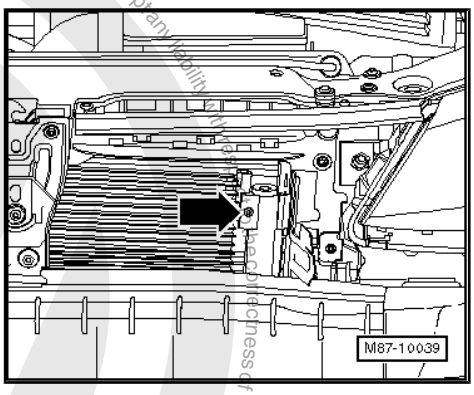
Danger of frost bite to skin and other parts of the body.

- ***Evacuate the refrigerant and immediately open the refrigerant circuit afterward.***
- ***If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

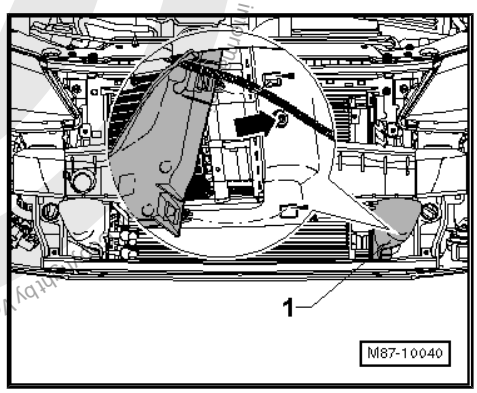
– Remove the bolts from the radiator -arrows-.



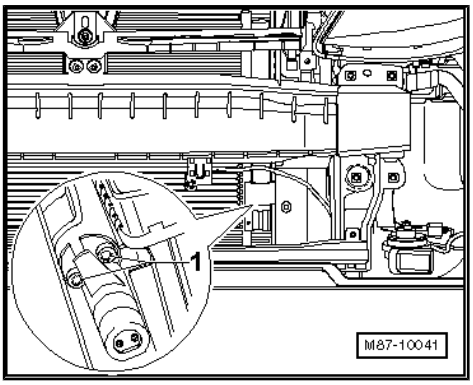
– Remove the bolt -arrows- and the clamp.



– Unclip the left air duct -1-.
– Remove the bolt -arrows-.



– Remove the bolt -1- and remove the receiver/dryer with dryer cartridge upward.



Installing

Install in reverse order of removal.

Note

- *First tighten the bolts -1- to 4.2 Nm ± 0.7 Nm and then tighten the bolt -2-.*
- *When installing the cooler, make sure that sealing strips are seated correctly on cooler.*
- *For capacities. Refer to ⇒ Fluid Capacity Tables; Rep. Gr. 03 .*

6.6 Receiver/Dryer with Dryer, Dryer and Screen, Removing and Installing, Mod-ine

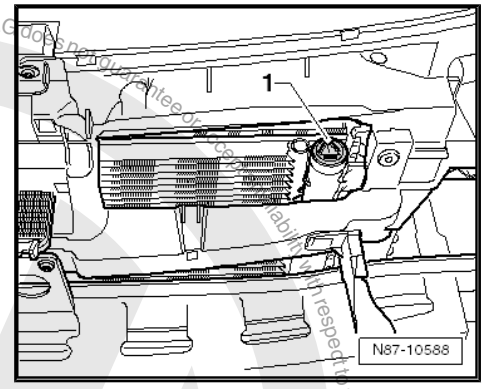
Removing

Note

Observe the notes. Refer to
⇒ "6.3 Refrigerant Circuit Components, Replacing", page 87 .

– Move the lock carrier into the service position. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Lock Carrier .
– Remove the» Safety Warning« label on the cap.

– Remove the cap -1- with a 50 TORX® socket.



WARNING

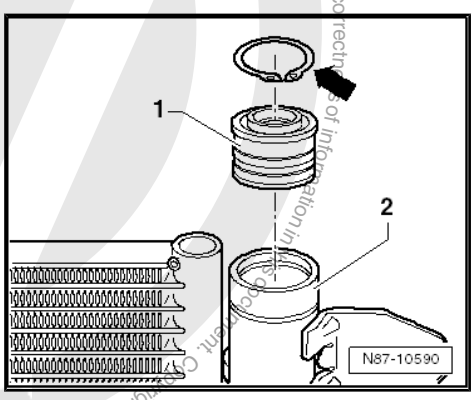
There is a risk of freezing.

Refrigerant and refrigerant oil will leak out if the refrigerant circuit has not been discharged.

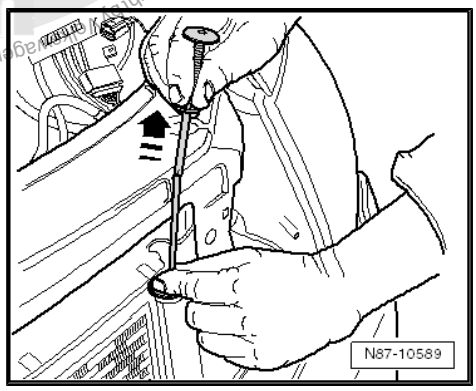
Refrigerant must be extracted before opening the refrigerant circuit. If the refrigerant circuit is not opened within 10 minutes after extracting it, pressure may build up in the circuit again from evaporation. Extract the refrigerant again.

– Push the cover -1- down slightly and remove the circlip -arrow-.

– Install the M12 bolt in the cap and carefully pull it out of the receiver/dryer -2-.



– Remove the dryer bag using a commercially available pick-up tool in the direction of -arrow- from the receiver/dryer.

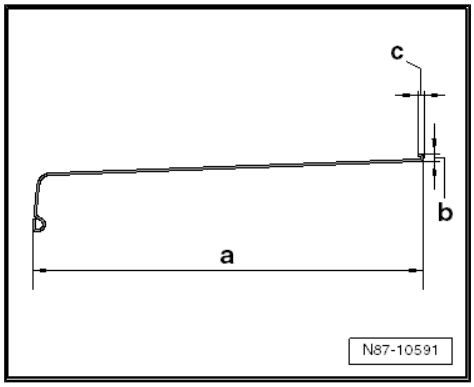


– Prepare a 2 mm welding wire with the following dimensions.

a - 380 mm

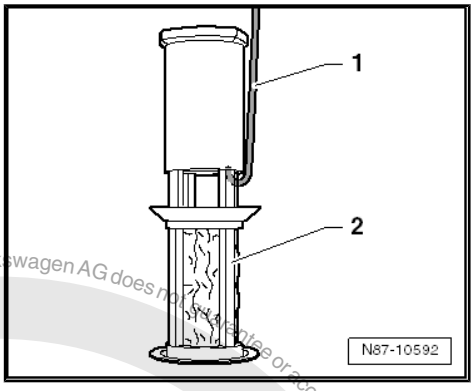
b - Maximum 7 mm

c - Maximum 6 mm



Hook the welding wire onto the strainer exactly as shown to prevent damage to the receiver/dryer.

– Carefully remove the strainer -2- from the receiver/dryer using the welding wire -1-.



6.7 A/C Compressor

⇒ “6.7.1 A/C Compressor, Removing and Installing”, page 93

⇒ “6.7.3 A/C Compressor First Start”, page 98

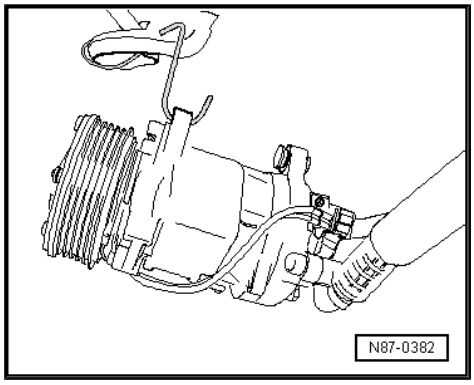
6.7.1 A/C Compressor, Removing and Installing

Special tools and workshop equipment required

- Torque Wrench 1331 5-50Nm - VAG1331-
- A/C Service Station - VAS6007A- or succeeding model

Note

If a new A/C compressor is installed, an “A/C compressor first start” must be performed. Refer to
⇒ “6.7.3 A/C Compressor First Start”, page 98 .



Note

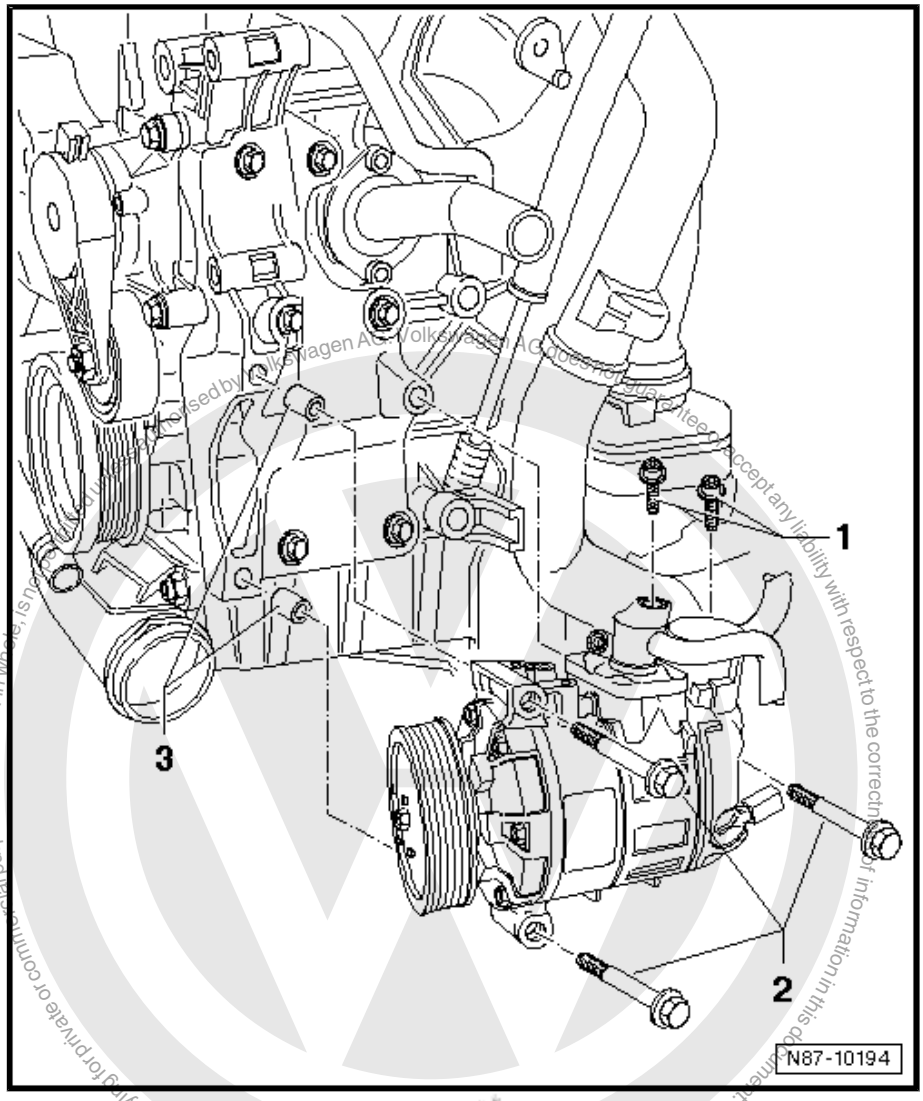
- *Flush the refrigerant circuit with refrigerant R134a under the following conditions:*
- *In the event of dirt or other contamination in the refrigerant circuit.*
- *If vacuum reading is not maintained on evacuating a leak-free refrigerant circuit (pressure build-up due to moisture in refrigerant circuit).*
- *The refrigerant circuit has been left open for longer than normal (for example, after a collision).*
- *If pressure and temperature measurements in the refrigerant circuit indicate the likelihood of moisture in the refrigerant circuit.*
- *It is not clear how much refrigerant oil is in the refrigerant circuit.*
- *A/C compressor had to be replaced due to internal damage (for example, noise or no output).*
- *Do not loosen the refrigerant pipes on the A/C compressor if only the sub-assembly bracket is being removed. Secure the A/C compressor to the vehicle body using a suitable material for example a welding wire.*

The procedure for flushing with refrigerant R134a is described in ELSA. Refer to ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 ; Refrigerant Circuit

Information for repairing vehicles with A/C and handling refrigerant can be found in ELSA under ⇒ Refrigerant R134a Servicing; Rep. Gr. 00; Refrigerant Circuit

Information for special tools and testing equipment when repairing vehicles with A/C can be found in ELSA. ⇒ Refrigerant R134a Servicing; Rep. Gr. 00

– Extract the refrigerant, using for example the -VAS6007A- , only then open the refrigerant circuit. See notes. Refer to ⇒ “6.3 Refrigerant Circuit Components, Replacing”, page 87 .
– Remove the ribbed belt. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 13 ; Cylinder Block, Belt Pulley Side; Ribbed Belt, Removing and Installing .



– Remove the noise insulation under the engine. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Noise Insulation .

WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- *Evacuate the refrigerant and immediately open the refrigerant circuit afterward.*
- *If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.*

– Remove the bolts (22 Nm ± 1 Nm) -1- from the A/C compressor and then disconnect the refrigerant pipes from the A/C compressor.

– Remove the hex bolts (25 Nm) -2- and the A/C compressor.

Installing

Note

- *Make sure alignment bushings -3- are seated correctly.*
- *Pay attention to notes for installing A/C compressor. Refer to ⇒ "6.13 A/C Compressor, Installation Notes", page 106 .*

6.7.2 Electrical A/C Compressor - V470- , Removing and Installing, Engine Codes CNLA and CRJA (Hybrid)

Special tools and workshop equipment required

- A/C Service Station - VAS6007A- (or succeeding model)
- Torque Wrench 1331 5-50Nm - VAG1331-
- Contact Surface Cleaning Set - VAS6410-

Note

- *Check the amount of the refrigerant oil in the new A/C compressor if the A/C Compressor Control Module - J842- is faulty. Do not flush the refrigerant circuit with R134a.*
- *Removing the refrigerant oil from the A/C compressor is described in Refrigerant R134a Servicing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00 under Flushing the Refrigerant Circuit with Refrigerant R134a; main wiring diagram for flushing circuits.*
- *Disable the vehicle high-voltage system if the refrigerant circuit was flushed with refrigerant R134a, for example, if the A/C compressor is damaged. Refer to ⇒ Electrical System Hybrid; Rep. Gr. 93 ; High Voltage System, De-Energizing .*

WARNING

Hybrid vehicles have a high-voltage system. Danger of electrical shock! It will also be necessary to work on the high-voltage system when performing the following procedures. Switch off the high-voltage system. Refer to ⇒ Electrical System Hybrid; Rep. Gr. 93 ; High Voltage System, De-Energizing .

WARNING

Hybrid vehicles have a high-voltage system. Danger of electrical shock! Inspect the high-voltage components visually before beginning. Follow the General Warnings. Refer to ⇒ Electrical System Hybrid; Rep. Gr. 93 ; High Voltage System General Warnings .

Note

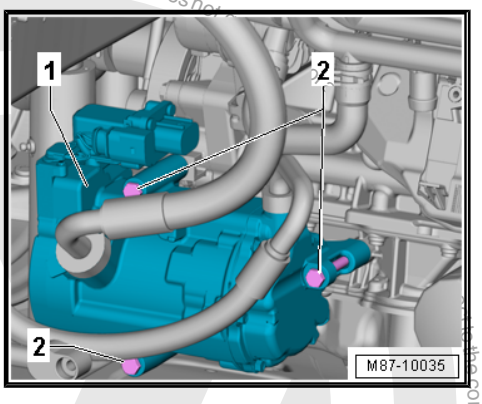
- *Inspect the attachment points for the A/C compressor and engine before installing.*
- *The contact surfaces must be clean and free of rust and grease.*
- *Otherwise, service the contact surfaces with the Contact Surface Cleaning Set - VAS6410- . Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 97 ; Contact Surfaces, Cleaning; Contact Surface Cleaning Set - VAS6410- .*

Removing

Note

- *Refrigerant must be extracted beforehand using the - VAS6007A- or succeeding model.*
- *Pay attention to the termination conditions on vehicles with a Start/Stop System. Refer to*
  ⇒ "2 Vehicles with Start/Stop System General Information", page 36 .

– Remove the bolts -2- (25 ± 3 Nm) from the A/C compressor -1-.

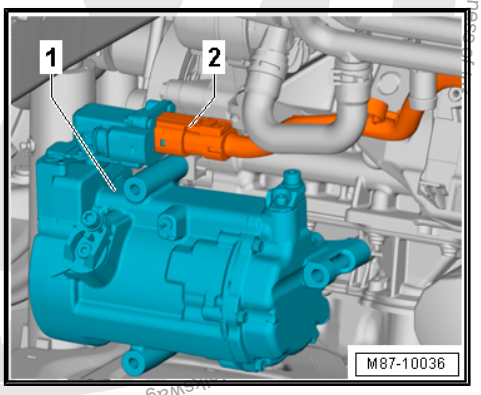


WARNING

Hybrid vehicles have a high-voltage system. Danger of electrical shock! Inspect the high-voltage components visually before beginning. Follow the General Warnings. Refer to ⇒ Electrical System Hybrid; Rep. Gr. 93 ; High Voltage System General Warnings .

– Remove the electric drive power and control electronics. Refer to ⇒ Electric Drive; Rep. Gr. 93 .

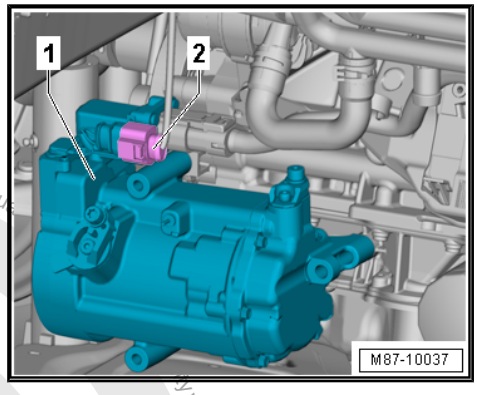
– Remove the high-voltage cable -2- from the A/C compressor -1-.



Note

Do not turn the connector. Risk of destroying.

– Disconnect the connector -2- from the A/C compressor -1-.



WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- ***Evacuate the refrigerant and immediately open the refrigerant circuit afterward.***
- ***If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.***

– Remove the bolt from the high pressure line (20 ± 3.0 Nm). Then remove the high pressure line from the A/C compressor and seal it with a suitable plug.

– Remove the bolt from the low pressure line (20 ± 3.0 Nm) and then remove the low pressure line from the A/C compressor.

– Remove the Electrical A/C Compressor - V470- downward.

Installing

Note

- *Inspect the attachment points for the A/C compressor and engine before installing.*
- *The contact surfaces must be clean and free of rust and grease.*
- *Otherwise, service the contact surfaces with the Contact Surface Cleaning Set - VAS6410- . Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 97 ; Contact Surfaces, Cleaning; Contact Surface Cleaning Set - VAS6410- .*

Note

- *Check the amount of the refrigerant oil in the new A/C compressor if the A/C Compressor Control Module - J842- is faulty. Do not flush the refrigerant circuit with R134a.*
- *The procedure for removing the refrigerant oil from the A/C compressor. Refer to Refrigerant R134a Servicing ⇒ Refrigerant R134a Servicing; Rep. Gr. 00 under Flushing the Refrigerant Circuit with Refrigerant R134a; main wiring diagram for flushing circuits.*

6.7.3 A/C Compressor First Start

Note

If a new A/C compressor is installed, an "A/C compressor first start" must be performed.

The following Conditions Must Be Met:

- Filling with refrigerant on the pressure side
- Engine off

- Vents set to “OFF”.
- Blowers on “level 3”
- A/C System off.

– Start the engine.

– Wait about five seconds until the engine idle has stabilized.

– Switch the A/C system on.

– Let the engine run in idle for two minutes.

– Turn off the engine.

6.8 A/C Compressor, Installation Notes

– Only start the engine after refrigerant circuit has been assembled.

– After installing a new A/C compressor or fresh refrigerant oil has been filled into compressor (for example after blowing through the A/C system), turn ribbed belt pulley of A/C compressor 10 rotations by hand before starting the engine.

This prevents damage to the A/C compressor.

– If possible start the engine only with a filled refrigerant circuit.

Note

- *If a new A/C compressor is installed, an "A/C compressor first start" must be performed. Refer to* *⇒ "6.7.3 A/C Compressor First Start", page 98 .*
- *The A/C compressor is always driven by the ribbed belt pulley (there is no A/C clutch).*
- *If an A/C compressor locks-up the overload protection from the compressor shaft is triggered. An indication that the A/C compressor has locked-up is bumps on the ribbed belt pulley, but these are not always easy to detect. Another indicator is rubber abrasion in the area of the ribbed belt pulley.*
- *The A/C compressor is equipped with a protected oil supply, this prevents A/C compressor damage in the event that the system is empty. This means that approximately 40 to 50 cm^3 of refrigerant oil remains in the A/C compressor.*
- *The engine may only be started when the refrigerant circuit is installed correctly. For example; if the refrigerant lines are not connected to A/C compressor, when the engine is running the A/C compressor may heat up (via internal heat generation) so much that the A/C compressor will be damaged.*
- *As there is no refrigerant in the circuit the refrigerant oil required to lubricate is not fed to the A/C compressor.*
- *A/C Compressor Regulator Valve - N280- is not activated when the refrigerant circuit is empty and the A/C compressor idles with the engine.*
- *If it is necessary to start the engine with a discharged refrigerant circuit:*
- *Refrigerant circuit must be fully assembled.*
- *At least a quarter of the prescribed refrigerant oil quantity must be in the A/C compressor.*
- *Do not let the engine speed go above 2,000 RPM.*
- *The engine should only run as long as is absolutely necessary (less than 10 Minutes).*

Note

Pay attention to the following when starting the engine for the first time after filling the refrigerant circuit:

– Start engine with the A/C compressor switched off and wait until the idling speed stabilizes.

– Open an instrument panel vent.

– Now turn on the A/C system and let the engine run idle for at least two minutes.

6.9 Pressure Relief Valve on A/C Compressor, Checking

- Function: Protects the refrigerant circuit against excessive pressure

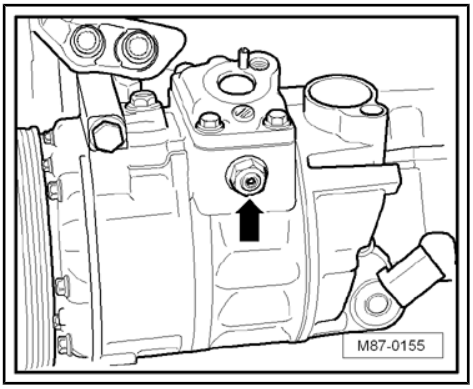
WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- *Evacuate the refrigerant and immediately open the refrigerant circuit afterward.*
- *If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.*

Checking Pressure Relief Valve on A/C Compressor (Sanden)



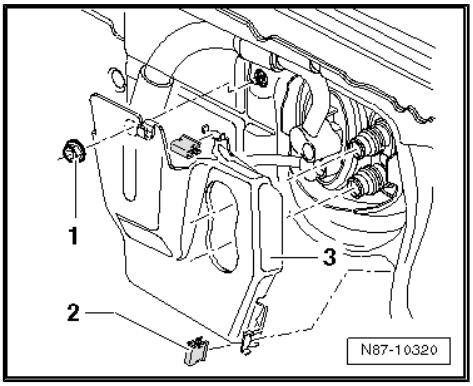
- The pressure relief valve -arrow- has operated when refrigerant oil is found in the close vicinity.
- In this case, the vehicle must be taken to a suitable service facility. Refer to ⇒ "6 Refrigerant Circuit Service Work, Performed Only by Specially Trained Personnel in Suitable Workshops", page 86 .

6.10 Expansion Valve, Removing and Functions

Note

- *Refrigerant must be extracted beforehand using, for example, the A/C Service Station - VAS6007A- .*
- *The previously used service stations can still be used. Refer to the VAG workshop equipment catalog.*
- *All open refrigerant circuit components must be sealed with suitable plugs to prevent any humidity from entering them.*
- *On some vehicles, the connecting pipe from charge air cooler should be removed. Refer to ⇒ Rep. Gr. 21 ; Charge Air System .*

Only for Vehicles with a Heat Shield in Front of the Expansion Valve



– Remove the nut -1- (6 ± 0.9 Nm).
– Remove the clamps -2- and the heat shield -3-.

1 - Bolts

- ❑ 12 Nm
- ❑ Quantity: 2

2 - Refrigerant Lines on Expansion Valve

3 - O-Ring

- ❑ 13.7 mm; 2.5 mm

4 - Expansion Valve

- ❑ Removing

– Extract the refrigerant, for example, using the A/C Service Station - VAS6007A- .

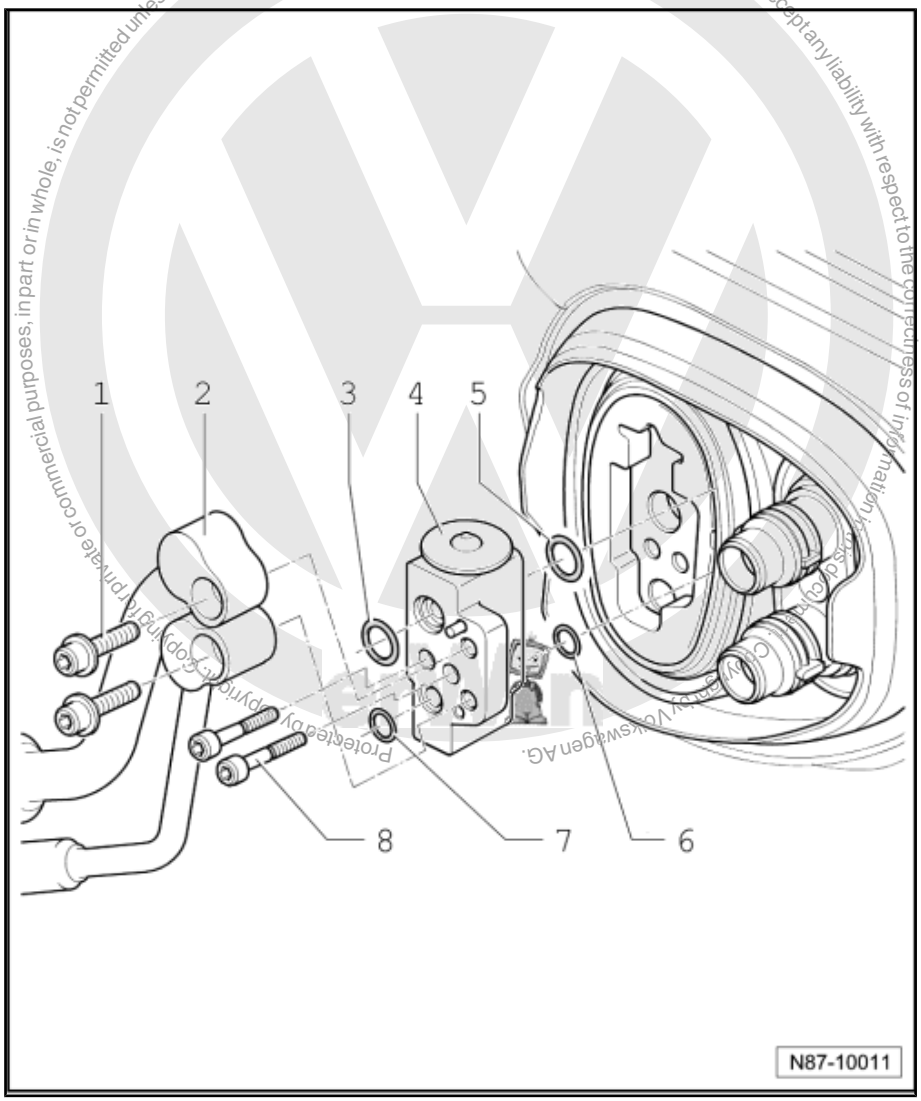
WARNING

Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

Evacuate the refrigerant and immediately open the refrigerant circuit afterward.

If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.



– Remove the bolts -item 1- ⇒ Item 1 (page 102) and refrigerant pipes -item 2- ⇒ Item 2 (page 102) from the expansion valve.

– Remove the bolts -item 8- ⇒ Item 8 (page 102) and the expansion valve.

5 - O-Ring

- ❑ 14 mm; 1.82 mm
- ❑ Coat with refrigerant oil when installing

6 - O-Ring

- ❑ 10.8 mm; 1.82 mm
- ❑ Coat with refrigerant oil when installing

7 - O-Ring

- ❑ 9.5 mm; 2.5 mm

8 - Cylindrical Combination Bolt

- ❑ 5 Nm

6.10.1 Functions

- The expansion valve atomizes the streaming refrigerant and controls the flow rate so that the vapor is gaseous only at the evaporator outlet, depending on the heat transmission.

6.11 Evaporator, Removing and Installing

– Remove the heater and A/C unit:

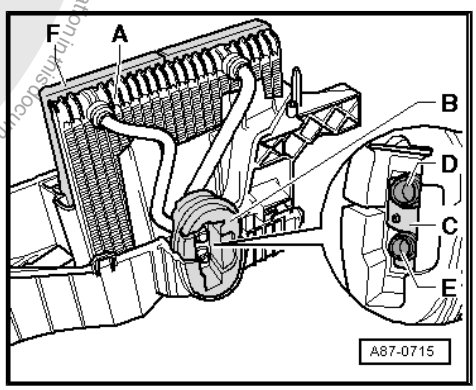
- Vehicles with Climatronic. Refer to ⇒ “4.8 Heater and A/C Unit, Removing and Installing, Climatronic”, page 62 .
- Vehicles with manual climate control system. Refer to ⇒ “3.2 Heater and A/C Unit, Removing and Installing (Manual Climate Control System)”, page 40 .

– Disassemble the heater and A/C unit:

- Vehicles with Climatronic. Refer to ⇒ “4.9 Heater and A/C Unit, Disassembling and Assembling”, page 66 .
- Vehicles with manual climate control system. Refer to ⇒ “3.3 Heater and A/C Unit, Disassembling and Assembling (Manual Climate Control System)”, page 44 .

– Disassemble the evaporator housing. Refer to ⇒ “4.10 Evaporator Housing, Disassembling and Assembling”, page 68 .

– Remove the evaporator -A- from the evaporator housing lower section.

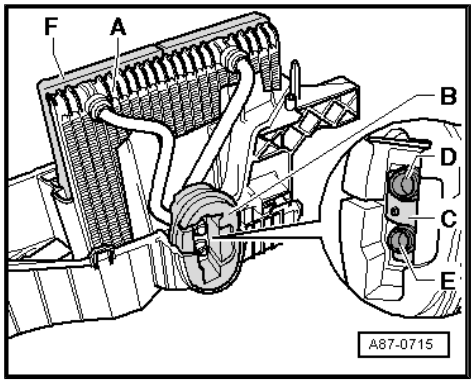


Note

- *Check the condensation water drain before inserting the evaporator. Clean the drain if necessary.*
- *Before inserting evaporator, clean evaporator housing and the evaporator if necessary.*

– When inserting the evaporator -A- into the evaporator housing lower section and when assembling both housing halves, make sure the seal -F- is not damaged.

– Check the seal -F- before installing the evaporator. It must be bonded all the way around.
– Mount the bracket -C- and seal/insulation -B- on the evaporator connecting tubes -D and E-.
– Insert the evaporator -A- into the evaporator housing lower section as shown in the illustration.



Note

- *After assembling both housing halves, check seal / insulation -B- for correct seating at the holes for both refrigerant lines -D and E-.*
- *Check the seating of the bracket -C- on both refrigerant lines -D and E- for correct seating.*
- *If heat protection insulation -B- is missing or not installed correctly, it can cause reduced performance of the A/C system (change of adjusted control characteristics of expansion valve due to radiant heat).*

6.12 Condenser, Removing and Installing

Special tools and workshop equipment required

- A/C Service Station - VAS6007A-

Note

- *Refrigerant must be extracted beforehand using, for example, the -VAS6007A- .*
- *The previously used service stations can still be used. Refer to the VAGworkshop equipment catalog.*
- *All open refrigerant circuit components must be sealed with suitable plugs to prevent any humidity from entering them.*

Perform following work first:

– Turn off all electrical equipment.
– Turn off the ignition.
– Remove the key.
– Extract the refrigerant, for example, using the -VAS6007A- .

Note

Environmentally hazardous draining of refrigerant is an offense punishable by law.

– Remove the front bumper. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Front Bumper Cover .
– Remove the lock carrier. Refer to ⇒ Body Exterior; Rep. Gr. 50 ; Lock Carrier .

WARNING

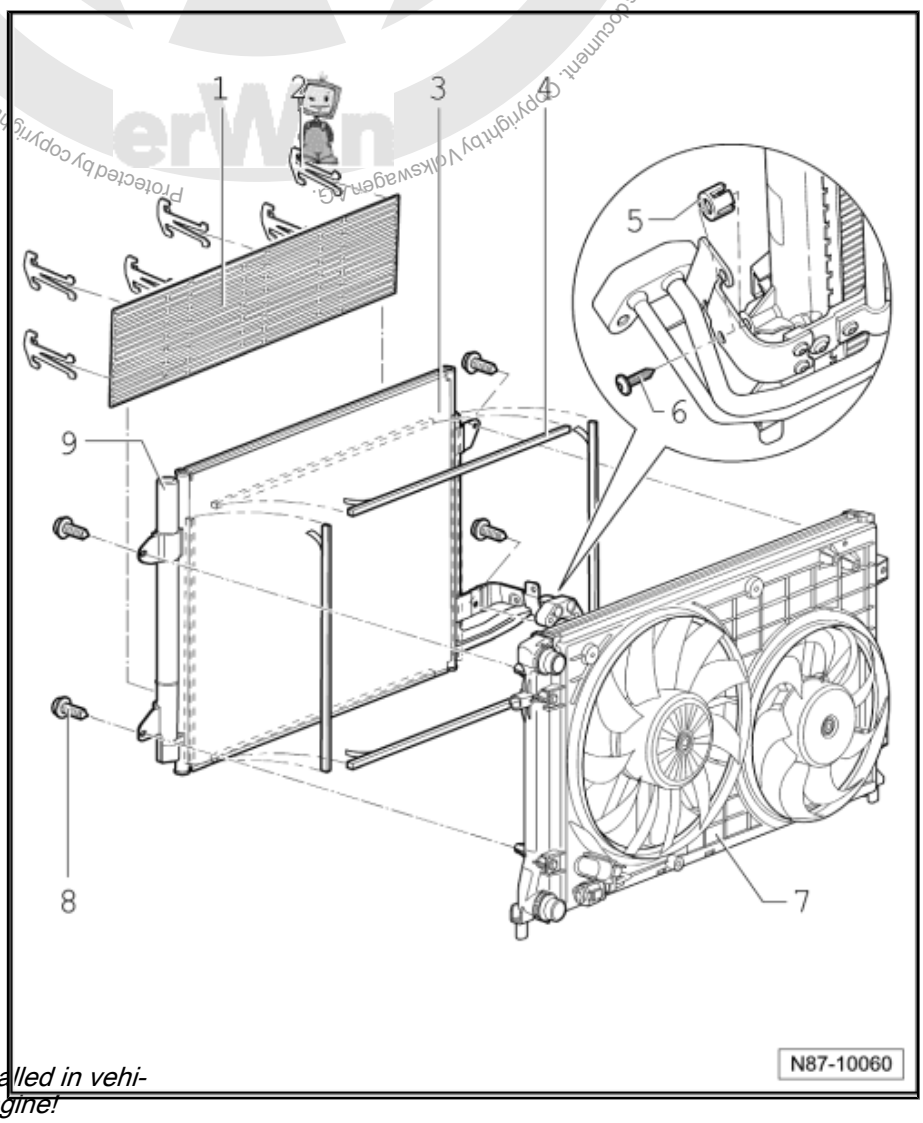
Danger due to refrigerant coming out under pressure.

Danger of frost bite to skin and other parts of the body.

- *Evacuate the refrigerant and immediately open the refrigerant circuit afterward.*
- *If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Pressure in the refrigerant circuit is caused by evaporation.*

– Remove the refrigerant lines at the condenser and seal them.

– Remove the bolts -item 8- ⇒ Item 8 (page 106) .



1 - Grille

- ❑ Only for vehicles with rough terrain equipment.
- ❑ Only in vehicles with “Showa” condenser.
- ❑ Position the grille from below on the second rib.

2 - Clip

- ❑ Quantity: 8

3 - Condenser

- ❑ Secure to radiator with four bolts

4 - Sealing Strips

- ❑ Adhere the upper sealing strips from above onto the 6th row of fins on the condenser before installing.
- ❑ Adhere the lower sealing strips from below onto the 1st row of fins on the condenser before installing.
- ❑ Adhere the side sealing strips from below onto the condenser collector from the 1st row of fins before installing.

5 - Spacer

Note

The spacer is only installed in vehicles with a gasoline engine!

6 - Bolt

- ❑ 5 Nm

7 - Radiator

8 - Bolts

- ❑ 5 Nm
- ❑ Quantity: 4

9 - Reservoir with Dryer Cartridge

- ❑ Removing and installing. Refer to ⇒ “6.5 Receiver/Dryer with Dryer Cartridge, Removing and Installing, Showa (FUJIKOKI)”, page 90 .

6.13 A/C Compressor, Installation Notes

⇒ “6.13.1 Installing”, page 106

6.13.1 Installing

– Start the engine only after assembling the refrigerant circuit.

– After installing a new A/C compressor or fresh refrigerant oil has been filled into compressor (for example, after blowing through the A/C system), turn the A/C compressor ribbed belt pulley 10 rotations by hand before starting the engine. This prevents damage to the A/C compressor.

– If possible, only start the engine when the refrigerant circuit is filled.

Note

- ♦ *The A/C compressor is always driven by the ribbed belt pulley (there is no A/C solenoid coupling).*
- ♦ *If an A/C compressor locks-up the overload protection for the A/C compressor shaft is triggered. An indication that the A/C compressor has locked-up is bumps on the ribbed belt pulley, but these are not always easy to detect. Another indicator is rubber abrasion in the area of the ribbed belt pulley.*
- ♦ *The A/C compressor is equipped with a protected oil supply, this prevents A/C compressor damage in the event that the system is empty. This means that approximately 40 to 50 cm^3 of refrigerant oil remains in the A/C compressor.*
- ♦ *The engine may only be started when the refrigerant circuit is installed correctly. For example; if the refrigerant lines are not connected to A/C compressor, when the engine is running the A/C compressor may heat up (via internal heat generation) so much that the A/C compressor will be damaged.*
- ♦ *A/C Compressor Regulator Valve - N280- is not activated when the refrigerant circuit is empty and the A/C compressor idles with the engine.*
- ♦ *If it is necessary to start the engine with a discharged refrigerant circuit:*
- ♦ *Refrigerant circuit must be fully assembled.*
- ♦ *At least 1/4 of the prescribed refrigerant oil must be in the A/C compressor.*
- ♦ *Engine speed must not exceed 2500 rpm.*
- ♦ *The engine should only run as long as is absolutely necessary.*

Note

Pay attention to the following when starting the engine for the first time after filling the refrigerant circuit:

- Start engine with A/C compressor switched off (“ECON” mode) and wait until the idling speed stabilizes.
- Open the instrument panel vents.
- Select the “LO” temperature setting on the Front A/C Display Control Head - E87- .
- Turn on the A/C compressor (“Auto” mode) and let the engine run for five minutes at idle.

7 Capacities

⇒ “7.1 Refrigerant R134a”, page 108

⇒ “7.2 Refrigerant Oil”, page 108

7.1 Refrigerant R134a

Refer to ⇒ Fluid Capacity Tables; Rep. Gr. 03

7.2 Refrigerant Oil

⇒ “7.2.1 Oil Distribution”, page 108

Refer to the ⇒ Fluid Capacity Tables; Rep. Gr. 03 .

Refer to the Parts Catalog.

Important Information:

Refrigerant oil attracts moisture. Close any opened containers immediately after use to prevent moisture from entering.

Refrigerant oil, because of its chemical properties, must not be disposed of with engine oils or transmission oils.

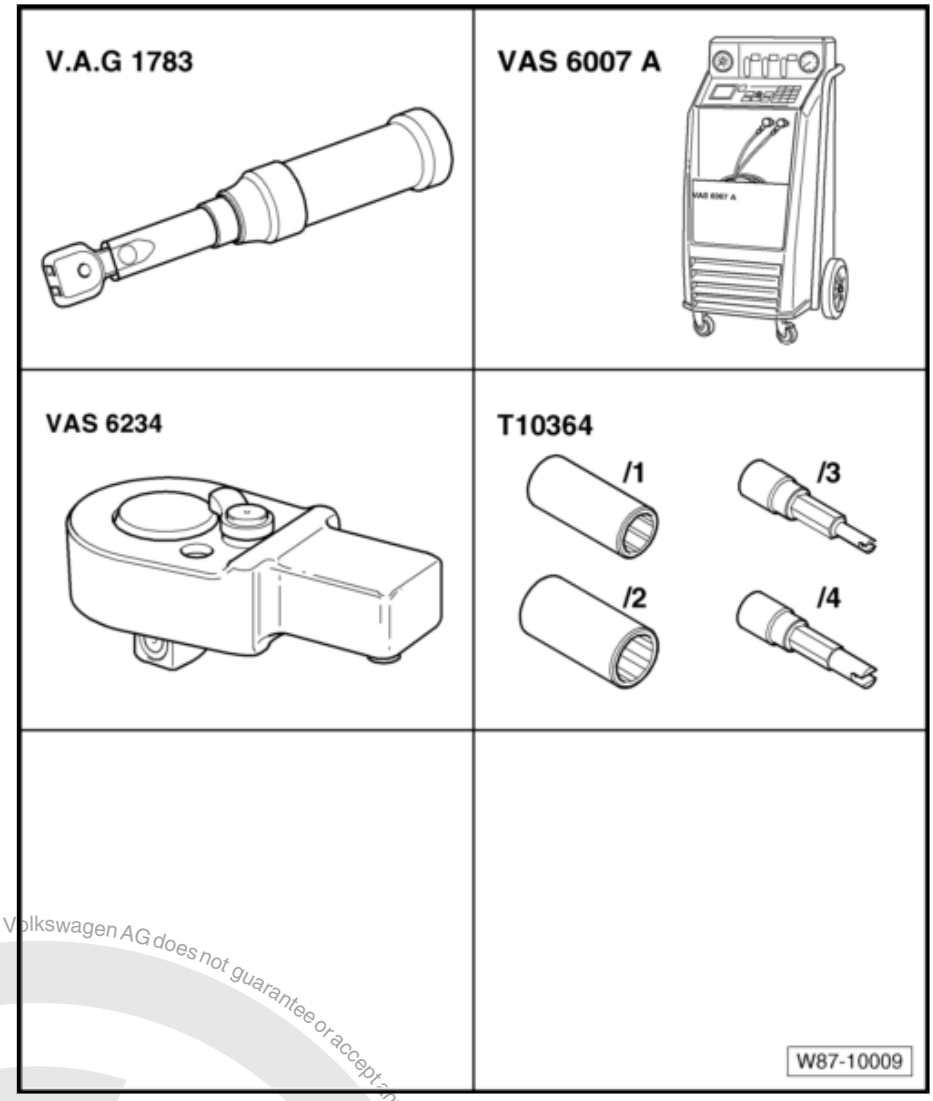
7.2.1 Oil Distribution

The oil, which is located in the A/C compressor oil pan before the initial switching on of the A/C system, is distributed through the refrigerant circuit as follows:

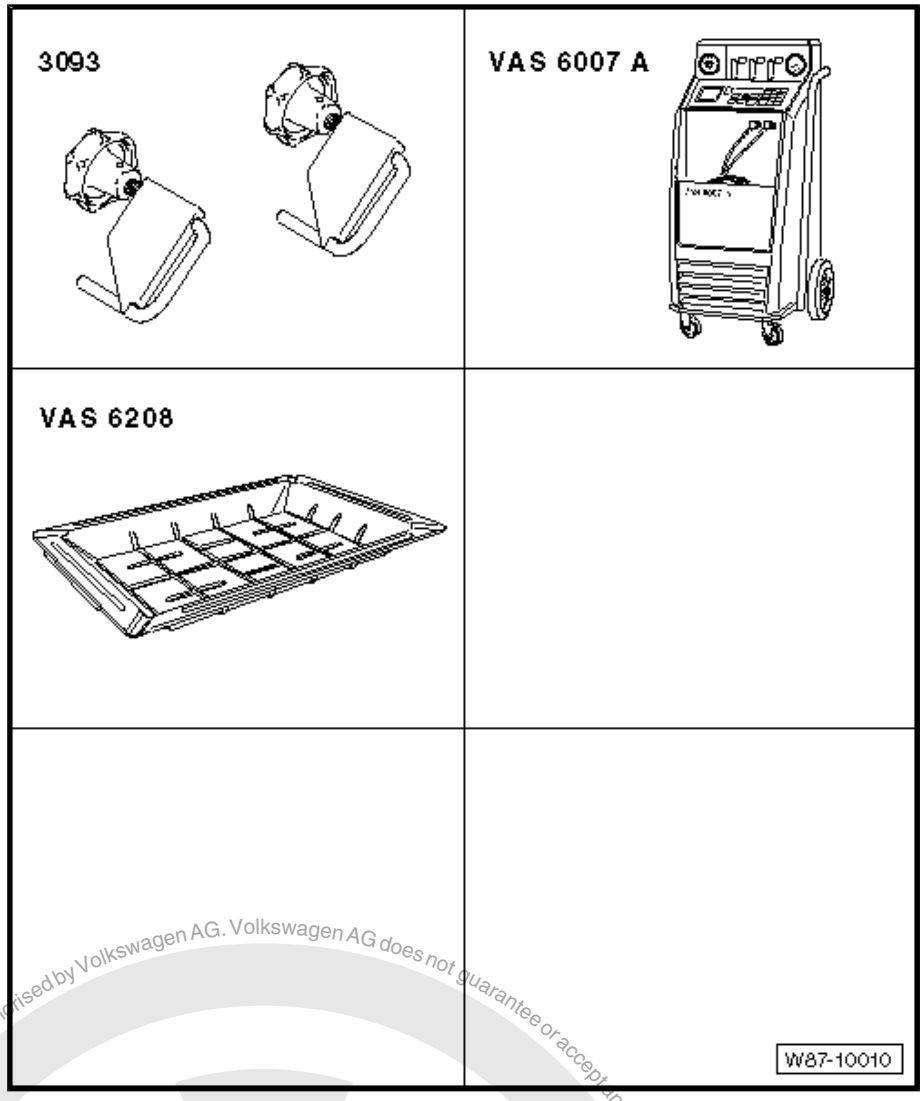
- A/C compressor: approximately 50%
- Condenser: approximately 10%
- Suction hose: approximately 10%
- Evaporator: approximately 20%
- Receiver/dryer: approximately 10%

8 Special Tools

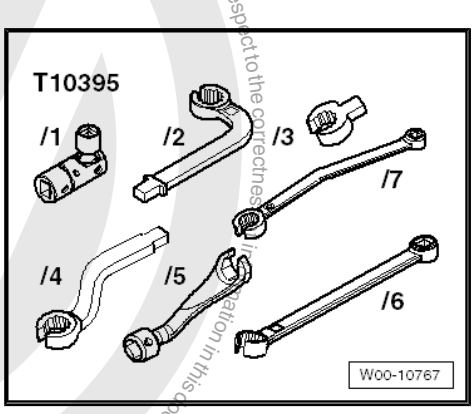
Special tools and workshop equipment required



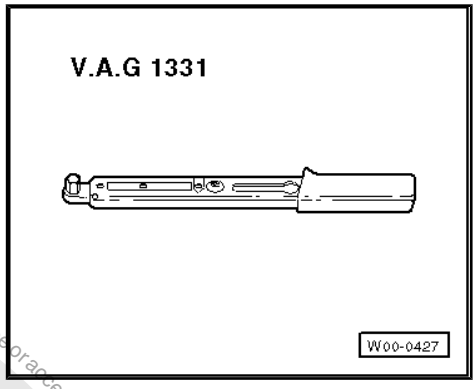
- Torque Wrench 1783 - 2-10Nm - VAG1783-
- Robinair A/C Service Unit - ROB134APF-
- Torque Wrench 1783 - 1/4" Drive Ratchet - VAS6234-
- Refrigerant Sockets - T10364-
- Test Box Kit - Adapter 47 - VAG1598/47-



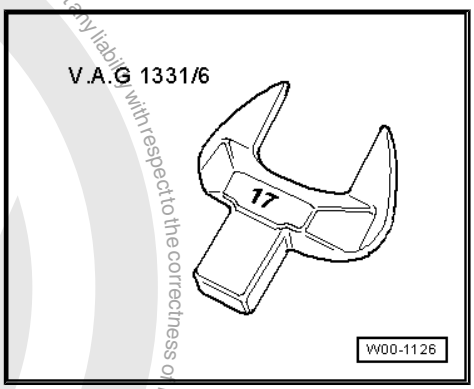
- Hose Clamps Up To 40 mm - 3093-
- Shop Crane - Drip Tray - VAS6208-
- Diesel Engine Tool Set - 17mm - T10395-



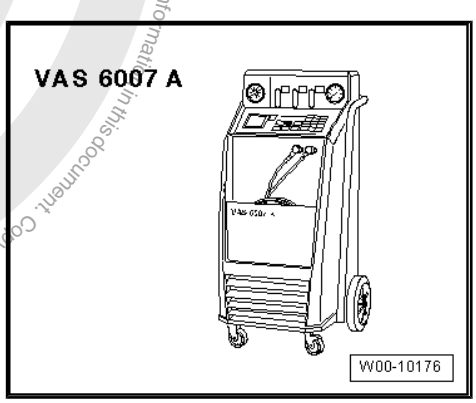
- Torque Wrench 1331 5-50Nm - VAG1331-



- Torque Wrench 1331 Insert - Open Jaw - 17mm - VAG1331/6-



- A/C Service Station - VAS6007A- or succeeding model



- Contact Surface Cleaning Set - VAS6410-

9 Revision History

DRUCK NUMBER: MEX5R006021

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
05.2017	05/21/2018	Local Factory Feedback	1342192	New chapter added for Outside Air Temp Sensor; RG 87 chapter 4.18	Tom Perry
05.2017`	12/15/2017	Local Factory Feedback	1303768	“replace all coolant” replaced with “inspect and add coolant” in Heater Core R&I	Tom Perry
05.2017	11/15/2017	Correction		added “knee airbag bracket” to the step to match SRT	Tom Perry
05.2017	11/08/2017`	Local Factory Feedback	1291244	knee airbag step added to Heater Core, Removing and Installing	Tom Perry
05.2017	08/02/2017	Factory Update	N/A		Eric P.
02.2017	06/22/2017	Local Update	N/A	162 metadata removed. New book created for 163 only (K0059072921)	Tom Perry
02.2017	04/13/2017	Factory Update	N/A		Joe Y.
06.2016	12/16/2016	Local Feedback	1221687	Link for 162 Jetta added to Heater Removing and Installing	Tom Perry
06.2016	08/23/2016	Local Feedback	1192669	Missing metadata added	Tom Perry
06.2016	08/15/2016	Local Feedback	1191946	162 added to V2 chapter metadata	Tom Perry
06.2016	07/12/2016	Factory Update	N/A	V71 section updated	Joe Y.
4.2016	5/11/2016	Local Feedback	1170926	Fixed spelling error	Janelle C.

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
4.2016	4/26/2016	Factory Update	N/A		Jim H
12.2014	01/12/2016	Local Feedback	1145913	Removed duplicate chapter for right footwell vent and created a single chapter. Fixed all links to new single chapter for all models.	Tom P.
12.2014	06/25/2015	Correction	N/A	Fixed broken links	Eric P.
12.2014	06/17/2015	Reformat	N/A	Update format to current standards	Eric P.
	02/10/2015	Feedback	1079009	Removed duplicate chapter for right footwell vent and created a single chapter. Fixed all links to new single chapter for all models.	Tom P.
	01/22/2015	Feedback	1072773	Chenged ext. link to int. link	Joe Y.
	12/05/2014	Factory Update	1057077		Tom P.
	06/27/2014	Local Update	1026047	Added learn procedure for HVAC to RG 80. Copied verbatim from RG 87	Tom P.
	06/25/2014	Factory Update	N/A	This procedure was copied over from the updated and duplicate procedure in the Body Interior book. Waiting on correct update from factory to either change or remove this duplicate chapter from the book	Tom P.

Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

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Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.

- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.

- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.

- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.

- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.

- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.

- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.

- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.

- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.

- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.

- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).

- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

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Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.

- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.

- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.

- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

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